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THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC,

FOR THE YEAR

1878.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF NAVIGATION:
WASHINGTON.
1875.

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1875. Aug. 13

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CORRECTIONS.

EPHEMERIS FOR 1877.—1st Edition.

Pages 2 and 3,	Jan. 1,	Equation of Time, Diff. for 1^{h},	*for*	$1^{s}.171$	*read*	$1^{s}.175$
148,	Sept. 2,	Rad. Vector, Diff. for 1^{h},	"	43.9	"	43.5
200, 329,	After Dec. 24, increase the Equation of Time $0^{s}.02$ for each day; for Dec. 32, add $0^{s}.16$					
294,	Dec. 24,	τ Leonis, Right Ascension,	*for*	$41^{s}.71$	*read*	$40^{s}.71$
333,		No. 4, " "	"	39^{m}	"	40^{m}
333,		No. 29,	"	κ Tauri	"	k Tauri
404,	May 10,	Jupiter, longitude,	"	27″	"	57″
409,	line 5,		"	64°	"	61°
411, 412,	Eclipse of August 8,	correction to the longitudes and μ, — 85° 11′ 43″				
494,	lines 10 and 11,		*for*	$\log \mu$	*read*	$\log \mu'$
494,	line 10 from the bottom,		"	$(35) - (38)$	"	$(38) - (35)$
494,	" 5 " "		"	$(27) + (28)$	"	$(23) + (24)$
3,	Appendix, line 4 from bottom,		"	497	"	485

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1878, WHICH COMPRISES THE LATTER PART OF THE 102D AND THE BEGINNING OF THE 103D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6591 of the Julian Period;
" 7386–87 of the Byzantine era;
" 5638–39 of the Jewish era;
" 2631 since the foundation of Rome, according to Varro;
" 2625 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ.
" 2654 of the Olympiads, or the second year of the 664th Olympiad, commencing in July, 1878, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2190 of the Grecian era, or the era of the Seleucidæ;
" 1594 of the era of Diocletian.

The year 1295 of the Mohammedan era, or the era of the Hegira, begins on the 5th of January, and 1296 on the 26th of December, 1878.

The first day of January of the year 1878 is the 2,406,986th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	F	Solar Cycle	11
Epact	26	Roman Indiction	6
Lunar Cycle or Golden Number	17	Julian Period	6591

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N.	North.	″	Seconds of Arc.
S.	South.	^{h}	Hours.
E.	East.	^{m}	Minutes of Time.
W.	West.	^{s}	Seconds of Time.

PREFACE.

The preparation of the *American Ephemeris and Nautical Al* was begun in the latter part of the year 1849, in accordance an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the preface and appendix of the first volume, that for the year 1855.

The changes introduced in the volumes for 1865 and 1869 are described in the prefaces of the volumes for those and subsequent years.

Hansen and Olufsen's tables of the sun were first used in the preparation of the volume for 1858; Newcomb's tables of Neptune in that for 1870; and Hill's tables of Venus and Newcomb's tables of Uranus in that for 1876.

The appendix to this volume contains the reduction of places of fundamental stars to Newcomb's right ascensions and Auwer's declinations.

A supplement contains tables for finding the latitude of a place by altitudes of the pole-star.

J. H. C. COFFIN,
Prof. Math. U. S. Navy, Superintendent.

Washington, *April,* 1875.

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ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	18 47 53.54	11.046	S. 23 0 2.0	+12.64	16 18.40	71.10	3 52.25	1.186
Wed.	2	18 52 18.46	11.030	22 54 44.9	13.78	16 18.39	71.04	4 20.52	1.171
Thur.	3	18 56 43.02	11.014	22 49 0.4	14.92	16 18.38	70.99	4 48.44	1.155
Frid.	4	19 1 7.18	10.997	22 42 48.5	16.05	16 18.37	70.93	5 15.96	1.138
Sat.	5	19 5 30.91	10.979	22 36 9.6	17.17	16 18.35	70.87	5 43.05	1.120
Sun.	6	19 9 54.18	10.960	22 29 3.8	18.29	16 18.33	70.81	6 9.69	1.100
Mon.	7	19 14 16.96	10.939	22 21 31.5	19.40	16 18.31	70.74	6 35.84	1.079
Tues.	8	19 18 39.23	10.917	22 13 32.9	20.49	16 18.28	70.67	7 1.48	1.057
Wed.	9	19 23 0.95	10.893	22 5 8.1	21.57	16 18.24	70.60	7 26.58	1.034
Thur.	10	19 27 22.09	10.868	21 56 17.3	22.64	16 18.20	70.52	7 51.09	1.009
Frid.	11	19 31 42.62	10.842	21 47 1.0	23.70	16 18.16	70.44	8 14.99	0.983
Sat.	12	19 36 2.52	10.816	21 37 19.4	24.75	16 18.11	70.36	8 38.27	0.957
Sun.	13	19 40 21.78	10.789	21 27 12.8	25.79	16 18.05	70.27	9 0.91	0.930
Mon.	14	19 44 40.38	10.761	21 16 41.4	26.81	16 17.99	70.18	9 22.90	0.902
Tues.	15	19 48 58.30	10.732	21 5 45.6	27.82	16 17.93	70.09	9 44.21	0.873
Wed.	16	19 53 15.53	10.702	20 54 25.5	28.82	16 17.86	69.99	10 4.82	0.844
Thur.	17	19 57 32.04	10.672	20 42 41.7	29.81	16 17.78	69.89	10 24.72	0.814
Frid.	18	20 1 47.82	10.642	20 30 34.4	30.78	16 17.70	69.79	10 43.89	0.784
Sat.	19	20 6 2.88	10.611	20 18 3.9	31.74	16 17.61	69.69	11 2.34	0.753
Sun.	20	20 10 17.20	10.580	20 5 10.5	32.69	16 17.52	69.59	11 20.06	0.722
Mon.	21	20 14 30.76	10.549	19 51 54.6	33.62	16 17.42	69.48	11 37.02	0.691
Tues.	22	20 18 43.57	10.517	19 38 16.5	34.54	16 17.31	69.37	11 53.22	0.659
Wed.	23	20 22 55.61	10.485	19 24 16.5	35.45	16 17.20	69.26	12 8.67	0.627
Thur.	24	20 27 6.88	10.453	19 9 54.9	36.34	16 17.08	69.15	12 23.34	0.595
Frid.	25	20 31 17.37	10.420	18 55 12.2	37.21	16 16.95	69.04	12 37.23	0.563
Sat.	26	20 35 27.07	10.387	18 40 8.7	38.07	16 16.82	68.93	12 50.34	0.530
Sun.	27	20 39 35.98	10.354	18 24 44.8	38.91	16 16.69	68.82	13 2.66	0.497
Mon.	28	20 43 44.09	10.321	18 9 0.8	39.74	16 16.55	68.71	13 14.16	0.463
Tues.	29	20 47 51.39	10.288	17 52 57.1	40.55	16 16.41	68.60	13 24.89	0.429
Wed.	30	20 51 57.88	10.254	17 36 34.2	41.35	16 16.27	68.48	13 34.80	0.395
Thur.	31	20 56 3.57	10.220	17 19 52.5	42.12	16 16.12	68.37	13 43.90	0.361
Frid.	32	21 0 8.43	10.186	S. 17 2 52.3	+42.88	16 15.97	68.25	13 52.18	0.327

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.19$ from the Sidereal Time.

+ prefixed to the change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, *to be subtracted from Mean Time.*		Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.		
		Apparent Right Ascension.			Diff. for 1 hour.	*Apparent* Declination.			Diff. for 1 hour.						
		h	m	s	s	°	′	″	″	m	s	s	h	m	s
Tues.	1	18	47	52.85	11.042	S. 23	0	2.8	+12.63	3	52.17	1.186	18	44	0.68
Wed.	2	18	52	17.67	11.027	22	54	46.0	13.77	4	20.43	1.171	18	47	57.24
Thur.	3	18	56	42.14	11.011	22	49	1.6	14.91	4	48.34	1.155	18	51	53.80
Frid.	4	19	1	6.22	10.994	22	42	49.9	16.04	5	15.86	1.138	18	55	50.36
Sat.	5	19	5	29.87	10.976	22	36	11.2	17.16	5	42.95	1.120	18	59	46.92
Sun.	6	19	9	53.06	10.957	22	29	5.7	18.28	6	9.58	1.100	19	3	43.48
Mon.	7	19	14	15.76	10.936	22	21	33.6	19.39	6	35.72	1.079	19	7	40.04
Tues.	8	19	18	37.95	10.914	22	13	35.2	20.48	7	1.36	1.057	19	11	36.59
Wed.	9	19	22	59.60	10.890	22	5	10.7	21.56	7	26.45	1.034	19	15	33.15
Thur.	10	19	27	20.67	10.865	21	56	20.3	22.63	7	50.96	1.009	19	19	29.71
Frid.	11	19	31	41.13	10.839	21	47	4.3	23.69	8	14.86	0.983	19	23	26.27
Sat.	12	19	36	0.96	10.813	21	37	22.9	24.74	8	38.13	0.957	19	27	22.83
Sun.	13	19	40	20.16	10.786	21	27	16.6	25.78	9	0.77	0.930	19	31	19.39
Mon.	14	19	44	38.70	10.758	21	16	45.6	26.80	9	22.76	0.902	19	35	15.94
Tues.	15	19	48	56.56	10.729	21	5	50.1	27.81	9	44.06	0.873	19	39	12.50
Wed.	16	19	53	13.73	10.700	20	54	30.3	28.81	10	4.68	0.844	19	43	9.05
Thur.	17	19	57	30.19	10.670	20	42	46.9	29.80	10	24.58	0.814	19	47	5.61
Frid.	18	20	1	45.92	10.640	20	30	39.9	30.77	10	43.75	0.784	19	51	2.17
Sat.	19	20	6	0.93	10.609	20	18	9.7	31.73	11	2.20	0.753	19	54	58.73
Sun.	20	20	10	15.20	10.578	20	5	16.6	32.68	11	19.91	0.722	19	58	55.29
Mon.	21	20	14	28.72	10.547	19	52	1.1	33.61	11	36.87	0.691	20	2	51.85
Tues.	22	20	18	41.49	10.515	19	38	23.3	34.53	11	53.09	0.659	20	6	48.40
Wed.	23	20	22	53.50	10.483	19	24	23.6	35.44	12	8.54	0.627	20	10	44.96
Thur.	24	20	27	4.73	10.451	19	10	2.3	36.33	12	23.21	0.595	20	14	41.52
Frid.	25	20	31	15.18	10.419	18	55	20.0	37.20	12	37.10	0.563	20	18	38.08
Sat.	26	20	35	24.85	10.386	18	40	16.8	38.06	12	50.22	0.530	20	22	34.63
Sun.	27	20	39	33.73	10.353	18	24	53.2	38.90	13	2.54	0.497	20	26	31.19
Mon.	28	20	43	41.81	10.320	18	9	9.5	39.73	13	14.07	0.463	20	30	27.74
Tues.	29	20	47	49.09	10.287	17	53	6.2	40.54	13	24.79	0.429	20	34	24.30
Wed.	30	20	51	55.56	10.253	17	36	43.5	41.34	13	34.70	0.395	20	38	20.86
Thur.	31	20	56	1.23	10.219	17	20	2.1	42.11	13	43.81	0.361	20	42	17.42
Frid.	32	21	0	6.07	10.185	S. 17	3	2.3	+42.87	13	52.10	0.327	20	46	13.97

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

Diff. for 1 hour.
+9^{s}.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	281 0 43.3	0 32.9	152.97	−0.99	9.9926595	+ 0.8	5 15 7.55
2	2	282 1 54.7	1 44.0	152.97	0.93	.9926623	1.5	5 11 11.64
3	3	283 3 6.1	2 55.2	152.98	0.84	.9926668	2.2	5 7 15.73
4	4	284 4 17.5	4 6.4	152.97	0.74	.9926728	2.9	5 3 19.81
5	5	285 5 28.7	5 17.4	152.96	0.62	.9926805	3.6	4 59 23.90
6	6	286 6 39.6	6 28.1	152.95	0.49	.9926900	4.3	4 55 27.99
7	7	287 7 50.2	7 38.5	152.93	0.35	.9927012	5.0	4 51 32.08
8	8	288 9 0.3	8 48.4	152.91	0.22	.9927142	5.8	4 47 36.16
9	9	289 10 9.9	9 57.8	152.89	−0.10	.9927292	6.8	4 43 40.25
10	10	290 11 18.9	11 6.7	152.86	+0.01	.9927462	7.6	4 39 44.34
11	11	291 12 27.3	12 14.9	152.84	0.10	.9927654	8.5	4 35 48.43
12	12	292 13 35.0	13 22.4	152.81	0.16	.9927868	9.4	4 31 52.51
13	13	293 14 42.0	14 29.2	152.78	0.19	.9928105	10.4	4 27 56.60
14	14	294 15 48.2	15 35.2	152.74	0.19	.9928366	11.4	4 24 0.69
15	15	295 16 53.1	16 40.0	152.71	0.16	.9928653	12.5	4 20 4.77
16	16	296 17 58.5	17 45.2	152.69	0.10	.9928968	13.7	4 16 8.87
17	17	297 19 2.6	18 49.1	152.66	+0.01	.9929311	14.9	4 12 12.96
18	18	298 20 6.0	19 52.3	152.63	−0.09	.9929680	16.0	4 8 17.05
19	19	299 21 8.7	20 54.8	152.60	0.21	.9930075	17.1	4 4 21.14
20	20	300 22 10.8	21 56.9	152.57	0.34	.9930497	18.2	4 0 25.22
21	21	301 23 12.2	22 58.1	152.54	0.48	.9930947	19.3	3 56 29.30
22	22	302 24 13.0	23 58.7	152.52	0.61	.9931424	20.3	3 52 33.39
23	23	303 25 13.2	24 58.7	152.50	0.72	.9931926	21.4	3 48 37.48
24	24	304 26 12.9	25 58.2	152.48	0.81	.9932452	22.4	3 44 41.57
25	25	305 27 12.1	26 57.3	152.45	0.87	.9933002	23.3	3 40 45.66
26	26	306 28 10.7	27 55.7	152.43	0.91	.9933572	24.1	3 36 49.75
27	27	307 29 8.6	28 53.4	152.40	0.92	.9934161	24.9	3 32 53.84
28	28	308 30 5.7	29 50.3	152.36	0.90	.9934769	25.7	3 28 57.93
29	29	309 31 2.1	30 46.5	152.33	0.84	.9935395	26.4	3 25 2.02
30	30	310 31 57.7	31 42.1	152.30	0.76	.9936036	27.0	3 21 6.11
31	31	311 32 52.4	32 36.6	152.26	0.66	.9936691	27.6	3 17 10.20
32	32	312 33 46.2	33 30.2	152.22	−0.54	9.9937360	+28.2	3 13 14.29

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January $0^d.0$.

Diff. for 1 hour.
$-9^s.8296$
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 25.9	15 21.9	56 31.3	−1.20	56 16.8	−1.20	23 7.4	2.34	27.6
2	15 18.1	15 14.2	56 2.5	1.19	55 48.4	1.17	☌		28.6
3	15 10.4	15 6.7	55 34.5	1.14	55 21.0	1.10	0 2.0	2.22	29.6
4	15 3.2	14 59.9	55 8.1	1.05	54 55.9	0.98	0 53.5	2.07	0.9
5	14 56.7	14 54.0	54 44.6	0.90	54 34.4	0.80	1 41.4	1.92	1.9
6	14 51.6	14 49.6	54 25.5	0.68	54 18.1	0.55	2 25.8	1.78	2.9
7	14 48.0	14 46.9	54 12.4	0.40	54 8.5	−0.24	3 7.4	1.68	3.9
8	14 46.5	14 46.6	54 6.7	−0.06	54 7.2	+0.13	3 47.1	1.63	4.9
9	14 47.4	14 48.8	54 9.9	+0.33	54 15.1	0.53	4 26.0	1.62	5.9
10	14 50.8	14 53.7	54 22.7	0.75	54 33.0	0.96	5 5.4	1.66	6.9
11	14 57.1	15 1.3	54 45.8	1.17	55 1.1	1.38	5 46.3	1.76	7.9
12	15 6.2	15 11.6	55 18.9	1.58	55 39.1	1.77	6 30.1	1.90	8.9
13	15 17.7	15 24.2	56 1.3	1.94	56 25.5	2.08	7 17.8	2.09	9.9
14	15 31.2	15 38.6	56 51.1	2.19	57 17.9	2.27	8 10.4	2.30	10.9
15	15 46.0	15 53.6	57 45.4	2.30	58 12.9	2.28	9 7.9	2.49	11.9
16	16 0.9	16 8.0	58 40.0	2.22	59 5.9	2.09	10 9.1	2.60	12.9
17	16 14.5	16 20.4	59 30.0	1.92	59 51.7	1.69	11 11.6	2.59	13.9
18	16 25.5	16 29.7	60 10.4	1.42	60 25.6	1.11	12 12.8	2.49	14.9
19	16 32.8	16 34.7	60 36.9	0.77	60 44.1	+0.42	13 10.9	2.34	15.9
20	16 35.5	16 35.1	60 47.1	+0.07	60 45.7	−0.28	14 5.4	2.20	16.9
21	16 33.7	16 31.2	60 40.4	−0.61	60 31.3	0.90	14 56.8	2.09	17.9
22	16 27.9	16 23.8	60 19.0	1.15	60 3.8	1.37	15 46.4	2.05	18.9
23	16 19.0	16 13.7	59 46.4	1.54	59 27.1	1.66	16 35.6	2.06	19.9
24	16 8.2	16 2.4	59 6.7	1.74	58 45.5	1.78	17 25.5	2.11	20.9
25	15 56.5	15 50.8	58 24.1	1.79	58 2.8	1.77	18 17.1	2.20	21.9
26	15 45.1	15 39.5	57 41.8	1.72	57 21.5	1.66	19 10.7	2.28	22.9
27	15 34.2	15 29.1	57 1.9	1.59	56 43.2	1.52	20 6.0	2.32	23.9
28	15 24.2	15 19.7	56 25.5	1.44	56 8.6	1.36	21 1.7	2.30	24.9
29	15 15.4	15 11.3	55 52.8	1.28	55 38.0	1.19	21 56.2	2.23	25.9
30	15 7.6	15 4.1	55 24.2	1.11	55 11.4	1.03	22 48.2	2.11	26.9
31	15 0.8	14 57.9	54 59.5	0.95	54 48.6	0.87	23 36.9	1.95	27.9
32	14 55 2	14 52.7	54 38.6	−0.79	54 29.6	−0.71	☌		28.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 1.					THURSDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 59 8.75	2.4311	S.27 28 27.4	2.250	0	18 53 47.87	2.3052	S.26 16 39.4	5.036
1	17 1 34.62	2.4312	27 30 37.6	2.090	1	18 56 6.03	2.3002	26 11 33.2	5.170
2	17 4 0.49	2.4310	27 32 38.2	1.930	2	18 58 23.89	2.2952	26 6 19.0	5.303
3	17 6 26.34	2.4308	27 34 29.2	1.770	3	19 0 41.45	2.2901	26 0 56.8	5.436
4	17 8 52.18	2.4305	27 36 10.6	1.610	4	19 2 58.70	2.2849	25 55 26.7	5.567
5	17 11 18.00	2.4301	27 37 42.4	1.449	5	19 5 15.64	2.2797	25 49 48.7	5.698
6	17 13 43.79	2.4296	27 39 4.5	1.288	6	19 7 32.27	2.2745	25 44 2.9	5.828
7	17 16 9.55	2.4289	27 40 17.0	1.129	7	19 9 48.58	2.2692	25 38 9.4	5.956
8	17 18 35.26	2.4280	27 41 20.0	0.970	8	19 12 4.57	2.2639	25 32 8.2	6.082
9	17 21 0.91	2.4270	27 42 13.4	0.810	9	19 14 20.25	2.2586	25 25 59.5	6.208
10	17 23 26.50	2.4260	27 42 57.2	0.651	10	19 16 35.60	2.2531	25 19 43.2	6.334
11	17 25 52.03	2.4248	27 43 31.5	0.492	11	19 18 50.62	2.2476	25 13 19.4	6.458
12	17 28 17.48	2.4235	27 43 56.2	0.333	12	19 21 5.31	2.2420	25 6 48.2	6.581
13	17 30 42.85	2.4222	27 44 11.4	0.174	13	19 23 19.66	2.2364	25 0 9.7	6.702
14	17 33 8.14	2.4207	27 44 17.1	−0.015	14	19 25 33.68	2.2309	24 53 23.9	6.823
15	17 35 33.33	2.4190	27 44 13.2	+0.143	15	19 27 47.37	2.2253	24 46 30.9	6.943
16	17 37 58.42	2.4172	27 43 59.9	0.301	16	19 30 0.72	2.2196	24 39 30.8	7.061
17	17 40 23.40	2.4153	27 43 37.1	0.458	17	19 32 13.72	2.2138	24 32 23.6	7.177
18	17 42 48.26	2.4133	27 43 4.9	0.615	18	19 34 26.38	2.2081	24 25 9.5	7.293
19	17 45 13.00	2.4112	27 42 23.3	0.772	19	19 36 38.69	2.2023	24 17 48.5	7.408
20	17 47 37.61	2.4090	27 41 32.3	0.928	20	19 38 50.66	2.1966	24 10 20.5	7.523
21	17 50 2.08	2.4067	27 40 31.9	1.084	21	19 41 2.28	2.1908	24 2 45.7	7.636
22	17 52 26.41	2.4042	27 39 22.2	1.239	22	19 43 13.55	2.1849	23 55 4.2	7.747
23	17 54 50.59	2.4017	S.27 38 3.2	1.393	23	19 45 24.47	2.1791	S.23 47 16.0	7.857
	WEDNESDAY 2.					FRIDAY 4.			
0	17 57 14.61	2.3990	S.27 36 35.0	1.548	0	19 47 35.04	2.1732	S.23 39 21.3	7.966
1	17 59 38.47	2.3962	27 34 57.5	1.709	1	19 49 45.26	2.1673	23 31 20.1	8.074
2	18 2 2.16	2.3933	27 33 10.8	1.855	2	19 51 55.12	2.1614	23 23 12.4	8.182
3	18 4 25.67	2.3902	27 31 14.9	2.007	3	19 54 4.63	2.1556	23 14 58.3	8.288
4	18 6 48.99	2.3871	27 29 9.9	2.159	4	19 56 13.79	2.1497	23 6 37.9	8.392
5	18 9 12.12	2.3839	27 26 55.8	2.310	5	19 58 22.59	2.1437	22 58 11.3	8.494
6	18 11 35.06	2.3807	27 24 32.7	2.460	6	20 0 31.04	2.1378	22 49 38.6	8.596
7	18 13 57.80	2.3773	27 22 0.6	2.610	7	20 2 39.13	2.1319	22 40 59.8	8.697
8	18 16 20.33	2.3737	27 19 19.5	2.760	8	20 4 46.87	2.1260	22 32 14.9	8.798
9	18 18 42.64	2.3700	27 16 29.4	2.909	9	20 6 54.25	2.1201	22 23 24.0	8.897
10	18 21 4.73	2.3663	27 13 30.4	3.057	10	20 9 1.28	2.1142	22 14 27.2	8.994
11	18 23 26.60	2.3625	27 10 22.6	3.203	11	20 11 7.96	2.1083	22 5 24.7	9.090
12	18 25 48.23	2.3585	27 7 6.0	3.350	12	20 13 14.28	2.1024	21 56 16.4	9.186
13	18 28 9.62	2.3546	27 3 40.6	3.495	13	20 15 20.25	2.0966	21 47 2.4	9.280
14	18 30 30.78	2.3506	27 0 6.6	3.639	14	20 17 25.87	2.0907	21 37 42.8	9.372
15	18 32 51.69	2.3464	26 56 23.9	3.783	15	20 19 31.14	2.0848	21 28 17.7	9.464
16	18 35 12.34	2.3421	26 52 32.6	3.926	16	20 21 36.05	2.0789	21 18 47.1	9.555
17	18 37 32.74	2.3377	26 48 32.8	4.068	17	20 23 40.61	2.0731	21 9 11.1	9.644
18	18 39 52.87	2.3332	26 44 24.5	4.209	18	20 25 44.82	2.0673	20 59 29.8	9.732
19	18 42 12.73	2.3287	26 40 7.7	4.349	19	20 27 48.69	2.0616	20 49 43.3	9.819
20	18 44 32.32	2.3242	26 35 42.6	4.488	20	20 29 52.21	2.0558	20 39 51.5	9.906
21	18 46 51.63	2.3195	26 31 9.2	4.626	21	20 31 55.39	2.0501	20 29 54.6	9.990
22	18 49 10.66	2.3148	26 26 27.5	4.764	22	20 33 58.22	2.0443	20 19 52.7	10.074
23	18 51 29.41	2.3101	26 21 37.5	4.901	23	20 36 0.70	2.0385	20 9 45.7	10.157
24	18 53 47.87	2.3052	S.26 16 39.4	5.036	24	20 38 2.84	2.0329	S.19 59 33.8	10.238

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 38 2.84	2.0329	S. 19 59 33.8	10.238	0	22 9 53.30	1.8139	S. 10 34 8.5	12.949
1	20 40 4.65	2.0273	19 49 17.1	10.318	1	22 11 42.04	1.8108	10 21 10.5	12.983
2	20 42 6.12	2.0217	19 38 55.6	10.398	2	22 13 30.60	1.8077	10 8 10.5	13.017
3	20 44 7.25	2.0161	19 28 29.3	10.477	3	22 15 18.97	1.8047	9 55 8.5	13.050
4	20 46 8.05	2.0106	19 17 58.4	10.553	4	22 17 7.16	1.8018	9 42 4.5	13.082
5	20 48 8.52	2.0051	19 7 22.9	10.629	5	22 18 55.18	1.7989	9 28 58.7	13.113
6	20 50 8.66	1.9996	18 56 42.9	10.704	6	22 20 43.03	1.7961	9 15 51.0	13.143
7	20 52 8.47	1 9942	18 45 58.4	10.777	7	22 22 30.71	1.7933	9 2 41.5	13.173
8	20 54 7.96	1.9887	18 35 9.6	10.850	8	22 24 18.23	1.7907	8 49 30.3	13.201
9	20 56 7.12	1.9833	18 24 16.4	10.922	9	22 26 5.59	1.7881	8 36 17.4	13.228
10	20 58 5.96	1.9780	18 13 18.9	10.993	10	22 27 52.80	1.7856	8 23 2.9	13.256
11	21 0 4.48	1.9727	18 2 17.2	11.063	11	22 29 39.86	1.7831	8 9 46.7	13.283
12	21 2 2.69	1.9675	17 51 11.4	11.131	12	22 31 26.77	1.7807	7 56 28.9	13.309
13	21 4 0.58	1.9623	17 40 1.5	11.198	13	22 33 13.54	1.7783	7 43 9.6	13.333
14	21 5 58.16	1.9572	17 28 47.6	11.265	14	22 35 0.17	1.7761	7 29 48.9	13.358
15	21 7 55.44	1.9522	17 17 29.7	11.331	15	22 36 46.67	1.7739	7 16 26.7	13.382
16	21 9 52.42	1.9471	17 6 7.9	11.394	16	22 38 33.04	1.7718	7 3 3.1	13.404
17	21 11 49.09	1.9420	16 54 42.4	11.457	17	22 40 19.29	1.7698	6 49 38.2	13.426
18	21 13 45.46	1.9370	16 43 13.1	11.519	18	22 42 5.42	1.7678	6 36 12.0	13.447
19	21 15 41.53	1.9321	16 31 40.1	11.581	19	22 43 51.43	1.7659	6 22 44.5	13.468
20	21 17 37.31	1.9272	16 20 3.4	11.641	20	22 45 37.33	1.7641	6 9 15.8	13.488
21	21 19 32.80	1.9224	16 8 23.2	11.700	21	22 47 23.12	1.7623	5 55 45.9	13.508
22	21 21 28.00	1.9177	15 56 39.4	11.759	22	22 49 8.81	1.7607	5 42 14.8	13.527
23	21 23 22.92	1.9129	S. 15 44 52.1	11.816	23	22 50 54.40	1.7590	S. 5 28 42.7	13.544
	SUNDAY 6.					TUESDAY 8.			
0	21 25 17.55	1.9083	S. 15 33 1.5	11.872	0	22 52 39.89	1.7574	S. 5 15 9.5	13.562
1	21 27 11.91	1.9037	15 21 7.5	11.927	1	22 54 25.29	1.7560	5 1 35.3	13.578
2	21 29 5.99	1.8991	15 9 10.2	11.982	2	22 56 10.61	1.7547	4 48 0.1	13.594
3	21 30 59.80	1.8946	14 57 9.7	12.035	3	22 57 55.85	1.7533	4 34 24.0	13.609
4	21 32 53.34	1.8902	14 45 6.0	12.088	4	22 59 41.01	1.7521	4 20 47.0	13.623
5	21 34 46.62	1.8858	14 32 59.1	12.140	5	23 1 26.10	1.7509	4 7 9.2	13.637
6	21 36 39.63	1.8814	14 20 49.2	12.190	6	23 3 11.12	1.7498	3 53 30.6	13.650
7	21 38 32.39	1.8772	14 8 36.3	12.240	7	23 4 56.07	1.7487	3 39 51.2	13.662
8	21 40 24.89	1.8729	13 56 20.4	12.288	8	23 6 40.96	1.7478	3 26 11.1	13.674
9	21 42 17.14	1.8687	13 44 1.7	12.336	9	23 8 25.80	1.7469	3 12 30.3	13.686
10	21 44 9.14	1.8647	13 31 40.1	12.383	10	23 10 10.59	1.7461	2 58 48.8	13.697
11	21 46 0.90	1.8607	13 19 15.7	12.430	11	23 11 55.33	1.7453	2 45 6.7	13.706
12	21 47 52.43	1.8568	13 6 48.5	12.476	12	23 13 40.03	1.7447	2 31 24.1	13.715
13	21 49 43.72	1.8528	12 54 18.6	12.519	13	23 15 24.69	1.7441	2 17 40.9	13.724
14	21 51 34.77	1.8489	12 41 46.2	12.562	14	23 17 9.32	1.7436	2 3 57.2	13.732
15	21 53 25.59	1.8452	12 29 11.2	12.605	15	23 18 53.92	1.7432	1 50 13.1	13.738
16	21 55 16.19	1.8415	12 16 33.6	12.647	16	23 20 38.50	1.7428	1 36 28.6	13.745
17	21 57 6.57	1.8378	12 3 53.6	12.687	17	23 22 23.06	1.7425	1 22 43.7	13.752
18	21 58 56.73	1.8342	11 51 11.2	12.727	18	23 24 7.60	1.7423	1 8 58.4	13.758
19	22 0 46.67	1.8306	11 38 26.4	12.767	19	23 25 52.13	1.7422	0 55 12.8	13.762
20	22 2 36.40	1.8271	11 25 39.2	12.805	20	23 27 36.66	1.7422	0 41 27.0	13.765
21	22 4 25.92	1.8237	11 12 49.8	12.842	21	23 29 21.19	1.7422	0 27 41.0	13.768
22	22 6 15.24	1.8204	10 59 58.2	12.878	22	23 31 5.72	1.7422	0 13 54.8	13.771
23	22 8 4.37	1.8172	10 47 4.4	12.914	23	23 32 50.26	1.7423	S. 0 0 8.5	13.773
24	22 9 53.30	1.8139	S. 10 34 8.5	12.949	24	23 34 34.80	1.7425	N. 0 13 38.0	13.775

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 9.					FRIDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 34 34.80	1.7425	N. 0 13 38.0	13.775	0	0 59 58.37	1.8457	N.11 3 56.7	13.053
1	23 36 19.36	1.7429	0 27 24.5	13.775	1	1 1 49.23	1.8498	11 16 58.9	13.020
2	23 38 3.95	1.7433	0 41 11.0	13.776	2	1 3 40.34	1.8539	11 29 59.1	12.986
3	23 39 48.56	1 7437	0 54 57.6	13.776	3	1 5 31.70	1.8581	11 42 57.2	12.951
4	23 41 33.20	1.7443	1 8 44.1	13.774	4	1 7 23.31	1.8624	11 55 53.2	12.915
5	23 43 17.88	1.7450	1 22 30.5	13.772	5	1 9 15.19	1.8669	12 8 47.0	12.878
6	23 45 2.60	1.7457	1 36 16.8	13.770	6	1 11 7.34	1.8714	12 21 38.6	12.841
7	23 46 47.36	1.7464	1 50 2.9	13.767	7	1 12 59.76	1.8759	12 34 27.9	12.802
8	23 48 32.17	1.7473	2 3 48.8	13.763	8	1 14 52.45	1.8805	12 47 14.9	12.763
9	23 50 17.04	1.7482	2 17 34.5	13.759	9	1 16 45.42	1.8852	12 59 59.5	12.723
10	23 52 1.96	1.7492	2 31 19.9	13.754	10	1 18 38.68	1.8901	13 12 41.7	12.682
11	23 53 46.95	1.7503	2 45 5.0	13.748	11	1 20 32.23	1.8949	13 25 21.3	12.639
12	23 55 32.00	1.7514	2 58 49.7	13.742	12	1 22 26.07	1.8998	13 37 58.4	12.597
13	23 57 17.12	1.7527	3 12 34.0	13.735	13	1 24 20.21	1.9049	13 50 32.9	12.553
14	23 59 2.32	1.7541	3 26 17.9	13.727	14	1 26 14.66	1.9101	14 3 4.8	12.508
15	0 0 47.61	1.7555	3 40 1.3	13.719	15	1 28 9.42	1.9152	14 15 33.9	12.462
16	0 2 32.98	1.7569	3 53 44.2	13.710	16	1 30 4.49	1.9204	14 28 0.2	12.415
17	0 4 18.44	1.7584	4 7 26.5	13.700	17	1 31 59.87	1.9257	14 40 23.7	12.367
18	0 6 3.99	1.7600	4 21 8.2	13.690	18	1 33 55.57	1.9311	14 52 44.3	12.318
19	0 7 49.64	1.7617	4 34 49.3	13.679	19	1 35 51.60	1.9367	15 5 1.9	12.268
20	0 9 35.40	1.7636	4 48 29.7	13.668	20	1 37 47.97	1.9422	15 17 16.5	12.218
21	0 11 21.27	1.7655	5 2 9.4	13.656	21	1 39 44.67	1.9478	15 29 28.1	12.167
22	0 13 7.26	1.7674	5 15 48.4	13.642	22	1 41 41.71	1.9536	15 41 36.5	12.113
23	0 14 53.36	1.7693	N. 5 29 26.5	13.628	23	1 43 39.10	1.9594	N.15 53 41.6	12.059
	THURSDAY 10.					SATURDAY 12.			
0	0 16 39.58	1.7714	N. 5 43 3.8	13.614	0	1 45 36.84	1.9652	N.16 5 43.5	12.004
1	0 18 25.93	1.7737	5 56 40.2	13.599	1	1 47 34.93	1.9712	16 17 42.1	11.947
2	0 20 12.42	1.7760	6 10 15.7	13.584	2	1 49 33.38	1.9771	16 29 37.2	11.890
3	0 21 59.05	1.7783	6 23 50.3	13.568	3	1 51 32.18	1.9831	16 41 28.9	11.832
4	0 23 45.82	1.7807	6 37 23.9	13.551	4	1 53 31.35	1.9893	16 53 17.1	11.773
5	0 25 32.73	1.7831	6 50 56.4	13.533	5	1 55 30.90	1.9956	17 5 1.7	11.712
6	0 27 19.79	1.7857	7 4 27.8	13.514	6	1 57 30.82	2.0018	17 16 42.6	11.650
7	0 29 7.01	1.7883	7 17 58.1	13.495	7	1 59 31.12	2.0082	17 28 19.7	11.587
8	0 30 54.39	1.7911	7 31 27.2	13.475	8	2 1 31.80	2.0146	17 39 53.1	11.524
9	0 32 41.94	1.7939	7 44 55.1	13.454	9	2 3 32.87	2.0211	17 51 22.6	11.459
10	0 34 29.66	1.7968	7 58 21.7	13.433	10	2 5 34.33	2.0276	18 2 48.2	11.392
11	0 36 17.56	1.7997	8 11 47.0	13.411	11	2 7 36.18	2.0342	18 14 9.7	11.324
12	0 38 5.63	1.8027	8 25 11.0	13.388	12	2 9 38.43	2.0408	18 25 27.1	11.256
13	0 39 53.89	1.8059	8 38 33.6	13.364	13	2 11 41.08	2.0476	18 36 40.4	11.186
14	0 41 42.34	1.8092	8 51 54.7	13.340	14	2 13 44.14	2.0544	18 47 49.4	11.114
15	0 43 30.99	1.8124	9 5 14.4	13.316	15	2 15 47.61	2.0612	18 58 54.1	11.042
16	0 45 19.83	1.8157	9 18 32.6	13.289	16	2 17 51.49	2.0682	19 9 54.4	10.968
17	0 47 8.88	1.8192	9 31 49.1	13.262	17	2 19 55.79	2.0752	19 20 50.3	10.893
18	0 48 58.14	1.8227	9 45 4.0	13.235	18	2 22 0.51	2.0822	19 31 41.6	10.817
19	0 50 47.61	1.8263	9 58 17.3	13.207	19	2 24 5.65	2.0892	19 42 28.3	10.739
20	0 52 37.30	1.8301	10 11 28.8	13.177	20	2 26 11.22	2.0964	19 53 10.3	10.661
21	0 54 27.22	1.8339	10 24 38.5	13.147	21	2 28 17.22	2.1036	20 3 47.6	10.581
22	0 56 17.37	1.8377	10 37 46.4	13.117	22	2 30 23.65	2.1108	20 14 20.0	10.499
23	0 58 7.75	1.8417	10 50 52.5	13.086	23	2 32 30.52	2.1181	20 24 47.5	10.416
24	0 59 58.37	1.8457	N.11 3 56.7	13.053	24	2 34 37.82	2.1254	N.20 35 9.9	10.332

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.					**TUESDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 34 37.82	2.1254	N.20 35 9.9	10.332	0	4 25 32.56	2.4923	N.26 46 10.2	4.540
1	2 36 45.57	2.1328	20 45 27.3	10.247	1	4 28 2.30	2.4991	26 50 37.9	4.382
2	2 38 53.76	2.1402	20 55 39.5	10.159	2	4 30 32.45	2.5058	26 54 56.1	4.222
3	2 41 2.40	2.1477	21 5 46.4	10.071	3	4 33 3.00	2.5124	26 59 4.6	4.061
4	2 43 11.49	2.1552	21 15 48.0	9.981	4	4 35 33.94	2.5189	27 3 3.4	3.899
5	2 45 21.03	2.1628	21 25 44.1	9.889	5	4 38 5.27	2.5252	27 6 52.5	3.737
6	2 47 31.03	2.1704	21 35 34.7	9.797	6	4 40 36.97	2.5315	27 10 31.8	3.572
7	2 49 41.48	2.1780	21 45 19.7	9.703	7	4 43 9.05	2.5377	27 14 1.1	3.405
8	2 51 52.39	2.1857	21 54 59.0	9.608	8	4 45 41.50	2.5438	27 17 20.4	3.237
9	2 54 3.77	2.1935	22 4 32.6	9.511	9	4 48 14.31	2.5498	27 20 29.6	3.068
10	2 56 15.61	2.2012	22 14 0.3	9.412	10	4 50 47.47	2.5557	27 23 28.6	2.898
11	2 58 27.91	2.2089	22 23 22.1	9.312	11	4 53 20.99	2.5615	27 26 17.4	2.727
12	3 0 40.68	2.2167	22 32 37.8	9.211	12	4 55 54.85	2.5671	27 28 55.8	2.554
13	3 2 53.92	2.2246	22 41 47.4	9.108	13	4 58 29.04	2.5725	27 31 23.8	2.380
14	3 5 7.63	2.2324	22 50 50.8	9.004	14	5 1 3.55	2.5778	27 33 41.4	2.206
15	3 7 21.81	2.2402	22 59 47.9	8.898	15	5 3 38.38	2.5831	27 35 48.5	2.030
16	3 9 36.46	2.2481	23 8 38.6	8.791	16	5 6 13.52	2.5882	27 37 45.0	1.852
17	3 11 51.58	2.2560	23 17 22.8	8.682	17	5 8 48.96	2.5931	27 39 30.8	1.674
18	3 14 7.18	2.2639	23 26 0.4	8.572	18	5 11 24.69	2.5978	27 41 5.9	1.495
19	3 16 23.25	2.2718	23 34 31.4	8.460	19	5 14 0.70	2.6025	27 42 30.2	1.314
20	3 18 39.80	2.2797	23 42 55.6	8.347	20	5 16 36.99	2.6071	27 43 43.6	1.133
21	3 20 56.82	2.2877	23 51 13.0	8.232	21	5 19 13.55	2.6115	27 44 46.1	0.951
22	3 23 14.32	2.2956	23 59 23.4	8.115	22	5 21 50.37	2.6157	27 45 37.7	0.767
23	3 25 32.29	2.3035	N.24 7 26.8	7.997	23	5 24 27.43	2.6197	N.27 46 18.2	0.582
	MONDAY 14.					**WEDNESDAY 16.**			
0	3 27 50.74	2.3115	N.24 15 23.0	7.877	0	5 27 4.73	2.6236	N.27 46 47.6	0.397
1	3 30 9.67	2.3194	24 23 12.0	7.756	1	5 29 42.26	2.6273	27 47 5.9	0.212
2	3 32 29.07	2.3272	24 30 53.7	7.633	2	5 32 20.01	2.6309	27 47 13.1	+0.026
3	3 34 48.94	2.3351	24 38 28.0	7.509	3	5 34 57.97	2.6343	27 47 9.0	−0.162
4	3 37 9.28	2.3430	24 45 54.8	7.383	4	5 37 36.13	2.6376	27 46 53.6	0.350
5	3 39 30.10	2.3509	24 53 14.0	7.256	5	5 40 14.48	2.6406	27 46 27.0	0.538
6	3 41 51.39	2.3588	25 0 25.5	7.127	6	5 42 53.00	2.6434	27 45 49.1	0.727
7	3 44 13.15	2.3666	25 7 29.2	6.996	7	5 45 31.69	2.6462	27 44 59.8	0.917
8	3 46 35.38	2.3743	25 14 25.0	6.864	8	5 48 10.55	2.6489	27 43 59.0	1.108
9	3 48 58.07	2.3821	25 21 12.9	6.731	9	5 50 49.56	2.6512	27 42 46.8	1.299
10	3 51 21.23	2.3898	25 27 52.7	6.595	10	5 53 28.70	2.6534	27 41 23.1	1.491
11	3 53 44.85	2.3974	25 34 24.3	6.457	11	5 56 7.97	2.6555	27 39 47.9	1.682
12	3 56 8.92	2.4050	25 40 47.6	6.319	12	5 58 47.36	2.6574	27 38 1.3	1.874
13	3 58 33.45	2.4127	25 47 2.6	6.180	13	6 1 26.86	2.6591	27 36 3.1	2.067
14	4 0 58.44	2.4203	25 53 9.2	6.038	14	6 4 6.45	2.6606	27 33 53.3	2.260
15	4 3 23.88	2.4278	25 59 7.2	5.895	15	6 6 46.13	2.6619	27 31 31.9	2.453
16	4 5 49.77	2.4352	26 4 56.6	5.751	16	6 9 25.88	2.6631	27 28 58.9	2.647
17	4 8 16.10	2.4426	26 10 37.3	5.604	17	6 12 5.70	2.6642	27 26 14.3	2.840
18	4 10 42.88	2.4500	26 16 9.1	5.456	18	6 14 45.58	2.6650	27 23 18.1	3.033
19	4 13 10.10	2.4572	26 21 32.0	5.307	19	6 17 25.50	2.6656	27 20 10.3	3.227
20	4 15 37.74	2.4643	26 26 46.0	5.157	20	6 20 5.45	2.6661	27 16 50.9	3.421
21	4 18 5.81	2.4714	26 31 50.9	5.005	21	6 22 45.43	2.6664	27 13 19.8	3.615
22	4 20 34.31	2.4785	26 36 46.6	4.852	22	6 25 25.42	2.6665	27 9 37.1	3.808
23	4 23 3.23	2.4854	26 41 33.1	4.697	23	6 28 5.41	2.6664	27 5 42.8	4.002
24	4 25 32.56	2.4923	N.26 46 10.2	4.540	24	6 30 45.39	2.6662	N.27 1 36.9	4.195

JANUARY, 1878.

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 17.					SATURDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 30 45.39	2.6662	N.27 1 36.9	4.195	0	8 35 39.02	2.4945	N.20 11 4.9	12.452
1	6 33 25.35	2.6658	26 57 19.4	4.388	1	8 38 8.52	2.4888	19 58 33.7	12.588
2	6 36 5.28	2.6653	26 52 50.3	4.581	2	8 40 37.68	2.4832	19 45 54.4	12.722
3	6 38 45.18	2.6646	26 48 9.7	4.774	3	8 43 6.50	2.4775	19 33 7.0	12.855
4	6 41 25.03	2.6636	26 43 17.5	4.967	4	8 45 34.98	2.4717	19 20 11.8	12.985
5	6 44 4.81	2.6624	26 38 13.7	5.158	5	8 48 3.11	2.4660	19 7 8.8	13.114
6	6 46 44.52	2.6612	26 32 58.4	5.349	6	8 50 30.90	2.4602	18 53 58.1	13.241
7	6 49 24.15	2.6598	26 27 31.7	5.541	7	8 52 58.34	2.4545	18 40 39.9	13.365
8	6 52 3.69	2.6583	26 21 53.6	5.731	8	8 55 25.44	2.4488	18 27 14.3	13.487
9	6 54 43.14	2.6566	26 16 4.1	5.920	9	8 57 52.20	2.4431	18 13 41.4	13.608
10	6 57 22.48	2.6546	26 10 3.2	6.109	10	9 0 18.61	2.4373	18 0 1.3	13.727
11	7 0 1.69	2.6524	26 3 51.0	6.298	11	9 2 44.67	2.4315	17 46 14.2	13.843
12	7 2 40.77	2.6502	25 57 27.4	6.487	12	9 5 10.39	2.4257	17 32 20.1	13.958
13	7 5 19.72	2.6479	25 50 52.6	6.673	13	9 7 35.76	2.4200	17 18 19.2	14.071
14	7 7 58.52	2.6454	25 44 6.6	6.859	14	9 10 0.79	2.4142	17 4 11.6	14.181
15	7 10 37.17	2.6428	25 37 9.5	7.044	15	9 12 25.47	2.4085	16 49 57.5	14.289
16	7 13 15.66	2.6401	25 30 1.3	7.229	16	9 14 49.81	2.4028	16 35 36.9	14.396
17	7 15 53.98	2.6371	25 22 42.0	7.413	17	9 17 13.81	2.3972	16 21 10.0	14.501
18	7 18 32.11	2.6340	25 15 11.7	7.596	18	9 19 37.47	2.3915	16 6 36.8	14.603
19	7 21 10.06	2.6308	25 7 30.5	7.777	19	9 22 0.79	2.3858	15 51 57.6	14.703
20	7 23 47.81	2.6274	24 59 38.5	7.957	20	9 24 23.77	2.3802	15 37 12.4	14.802
21	7 26 25.35	2.6239	24 51 35.6	8.137	21	9 26 46.41	2.3746	15 22 21.4	14.898
22	7 29 2.68	2.6204	24 43 22.0	8.315	22	9 29 8.72	2.3691	15 7 24.7	14.992
23	7 31 39.80	2.6167	N.24 34 57.8	8.492	23	9 31 30.70	2.3636	N.14 52 22.4	15.083
	FRIDAY 18.					SUNDAY 20.			
0	7 34 16.69	2.6128	N.24 26 22.9	8.669	0	9 33 52.35	2.3581	N.14 37 14.7	15.173
1	7 36 53.34	2.6088	24 17 37.5	8.843	1	9 36 13.67	2.3527	14 22 1.6	15.261
2	7 39 29.75	2.6048	24 8 41.7	9.017	2	9 38 34.67	2.3472	14 6 43.4	15.346
3	7 42 5.92	2.6007	23 59 35.5	9.189	3	9 40 55.34	2.3418	13 51 20.1	15.430
4	7 44 41.84	2.5965	23 50 19.0	9.361	4	9 43 15.69	2.3365	13 35 51.8	15.512
5	7 47 17.50	2.5921	23 40 52.2	9.531	5	9 45 35.72	2.3313	13 20 18.7	15.592
6	7 49 52.89	2.5876	23 31 15.3	9.698	6	9 47 55.44	2.3261	13 4 40.8	15.669
7	7 52 28.01	2.5831	23 21 28.4	9.865	7	9 50 14.85	2.3209	12 48 58.4	15.744
8	7 55 2.86	2.5784	23 11 31.5	10.031	8	9 52 33.95	2.3158	12 33 11.5	15.817
9	7 57 37.42	2.5736	23 1 24.7	10.195	9	9 54 52.74	2.3107	12 17 20.3	15.889
10	8 0 11.69	2.5688	22 51 8.1	10.357	10	9 57 11.23	2.3057	12 1 24.8	15.958
11	8 2 45.67	2.5639	22 40 41.9	10.516	11	9 59 29.42	2.3007	11 45 25.3	16.025
12	8 5 19.36	2.5589	22 30 6.2	10.674	12	10 1 47.31	2.2958	11 29 21.8	16.090
13	8 7 52.74	2.5538	22 19 21.0	10.832	13	10 4 4.91	2.2910	11 13 14.5	16.153
14	8 10 25.82	2.5487	22 8 26.3	10.989	14	10 6 22.23	2.2862	10 57 3.5	16.214
15	8 12 58.59	2.5435	21 57 22.3	11.143	15	10 8 39.26	2.2815	10 40 48.8	16.273
16	8 15 31.04	2.5383	21 46 9.1	11.296	16	10 10 56.01	2.2768	10 24 30.7	16.330
17	8 18 3.18	2.5330	21 34 46.8	11.447	17	10 13 12.48	2.2722	10 8 9.2	16.385
18	8 20 35.00	2.5276	21 23 15.5	11.596	18	10 15 28.68	2.2677	9 51 44.5	16.437
19	8 23 6.49	2.5222	21 11 35.3	11.743	19	10 17 44.61	2.2633	9 35 16.7	16.488
20	8 25 37.66	2.5167	20 59 46.3	11.888	20	10 20 0.28	2.2589	9 18 45.9	16.537
21	8 28 8.50	2.5112	20 47 48.7	12.032	21	10 22 15.68	2.2546	9 2 12.2	16.584
22	8 30 39.01	2.5057	20 35 42.5	12.173	22	10 24 30.83	2.2504	8 45 35.8	16.629
23	8 33 9.18	2.5001	20 23 27.9	12.313	23	10 26 45.73	2.2462	8 28 56.7	16.672
24	8 35 39.02	2.4945	N.20 11 4.9	12.452	24	10 29 0.38	2.2421	N. 8 12 15.1	16.713

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 29 0.38	2.2421	N. 8 12 15.1	16.713	0	12 13 27.93	2.1428	S. 5 21 47.8	16.542
1	10 31 14.78	2.2381	7 55 31.1	16.752	1	12 15 36.50	2.1428	5 38 19.0	16.498
2	10 33 28.95	2.2342	7 38 44.9	16.788	2	12 17 45.07	2.1429	5 54 47.5	16.452
3	10 35 42.89	2.2304	7 21 56.5	16.823	3	12 19 53.65	2.1431	6 11 13.2	16.405
4	10 37 56.60	2.2266	7 5 6.1	16.857	4	12 22 2.24	2.1433	6 27 36.1	16.357
5	10 40 10.08	2.2228	6 48 13.7	16.888	5	12 24 10.85	2.1437	6 43 56.0	16.307
6	10 42 23.34	2.2192	6 31 19.5	16.917	6	12 26 19.48	2.1440	7 0 12.9	16.256
7	10 44 36.38	2.2157	6 14 23.6	16.945	7	12 28 28.13	2.1445	7 16 26.7	16.203
8	10 46 49.22	2.2122	5 57 26.1	16.970	8	12 30 36.82	2.1452	7 32 37.3	16.149
9	10 49 1.85	2.2088	5 40 27.2	16.993	9	12 32 45.55	2.1458	7 48 44.6	16.094
10	10 51 14.28	2.2055	5 23 26.9	17.015	10	12 34 54.32	2.1465	8 4 48.6	16.037
11	10 53 26.51	2.2023	5 6 25.4	17.034	11	12 37 3.13	2.1473	8 20 49.1	15.979
12	10 55 38.55	2.1992	4 49 22.8	17.052	12	12 39 11.99	2.1482	8 36 46.1	15.919
13	10 57 50.41	2.1961	4 32 19.2	17.068	13	12 41 20.91	2.1491	8 52 39.4	15.858
14	11 0 2.08	2.1931	4 15 14.7	17.083	14	12 43 29.88	2.1500	9 8 29.0	15.796
15	11 2 13.58	2.1902	3 58 9.3	17.096	15	12 45 38.91	2.1511	9 24 14.9	15.733
16	11 4 24.91	2.1874	3 41 3.2	17.106	16	12 47 48.01	2.1523	9 39 56.9	15.668
17	11 6 36.07	2.1847	3 23 56.6	17.114	17	12 49 57.19	2.1536	9 55 35.0	15.601
18	11 8 47.07	2.1821	3 6 49.5	17.122	18	12 52 6.44	2.1548	10 11 9.0	15.532
19	11 10 57.92	2.1795	2 49 42.0	17.127	19	12 54 15.77	2.1562	10 26 38.9	15.463
20	11 13 8.61	2.1770	2 32 34.3	17.129	20	12 56 25.19	2.1577	10 42 4.6	15.393
21	11 15 19.16	2.1747	2 15 26.5	17.131	21	12 58 34.69	2.1592	10 57 26.1	15.322
22	11 17 29.57	2.1724	1 58 18.6	17.131	22	13 0 44.29	2.1607	11 12 43.2	15.248
23	11 19 39.84	2.1702	N. 1 41 10.8	17.129	23	13 2 53.98	2.1623	S. 11 27 55.9	15.174
	TUESDAY 22.					THURSDAY 24.			
0	11 21 49.99	2.1681	N. 1 24 3.1	17.126	0	13 5 3.77	2.1640	S. 11 43 4.1	15.098
1	11 24 0.01	2.1660	1 6 55.7	17.120	1	13 7 13.66	2.1658	11 58 7.7	15.022
2	11 26 9.91	2.1641	0 49 48.7	17.113	2	13 9 23.67	2.1677	12 13 6.7	14.943
3	11 28 19.70	2.1622	0 32 42.2	17.104	3	13 11 33.79	2.1697	12 28 0.9	14.863
4	11 30 29.38	2.1604	N. 0 15 36.2	17.093	4	13 13 44.03	2.1716	12 42 50.3	14.782
5	11 32 38.95	2.1587	S. 0 1 29.0	17.080	5	13 15 54.38	2.1735	12 57 34.8	14.701
6	11 34 48.42	2.1571	0 18 33.4	17.066	6	13 18 4.85	2.1756	13 12 14.4	14.618
7	11 36 57.80	2.1556	0 35 36.9	17.051	7	13 20 15.45	2.1777	13 26 48.9	14.533
8	11 39 7.09	2.1542	0 52 39.5	17.034	8	13 22 26.18	2.1799	13 41 18.3	14.448
9	11 41 16.30	2.1528	1 9 41.0	17.015	9	13 24 37.04	2.1822	13 55 42.6	14.361
10	11 43 25.43	2.1516	1 26 41.3	16.994	10	13 26 48.04	2.1845	14 10 1.6	14.272
11	11 45 34.49	2.1504	1 43 40.3	16.973	11	13 28 59.18	2.1868	14 24 15.2	14.182
12	11 47 43.48	2.1493	2 0 38.0	16.949	12	13 31 10.46	2.1892	14 38 23.5	14.092
13	11 49 52.41	2.1483	2 17 34.2	16.923	13	13 33 21.89	2.1917	14 52 26.3	14.000
14	11 52 1.28	2.1474	2 34 28.8	16.896	14	13 35 33.47	2.1942	15 6 23.5	13.907
15	11 54 10.10	2.1466	2 51 21.7	16.867	15	13 37 45.19	2.1967	15 20 15.1	13.813
16	11 56 18.87	2.1458	3 8 12.9	16.837	16	13 39 57.07	2.1993	15 34 1.0	13.718
17	11 58 27.60	2.1452	3 25 2.2	16.806	17	13 42 9.11	2.2020	15 47 41.2	13.622
18	12 0 36.29	2.1446	3 41 49.6	16.773	18	13 44 21.31	2.2047	16 1 15.6	13.524
19	12 2 44.95	2.1441	3 58 35.0	16.738	19	13 46 33.67	2.2074	16 14 44.1	13.425
20	12 4 53.58	2.1437	4 15 18.2	16.701	20	13 48 46.20	2.2102	16 28 6.6	13.324
21	12 7 2.19	2.1433	4 31 59.1	16.663	21	13 50 58.89	2.2129	16 41 23.0	13.223
22	12 9 10.78	2.1431	4 48 37.7	16.624	22	13 53 11.75	2.2158	16 54 33.3	13.121
23	12 11 19.36	2.1429	5 5 14.0	16.584	23	13 55 24.79	2.2187	17 7 37.5	13.018
24	12 13 27.93	2.1428	S. 5 21 47.8	16.542	24	13 57 38.00	2.2217	S. 17 20 35.4	12.913

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 25.					SUNDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 57 38.00	2.2217	S.17 20 35.4	12.913	0	15 47 51.66	2.3665	S.25 20 31.8	6.741
1	13 59 51.39	2.2246	17 33 27.0	12.807	1	15 50 13.72	2.3688	25 27 11.8	6.593
2	14 2 4.95	2.2275	17 46 12.2	12.700	2	15 52 35.91	2.3710	25 33 42.9	6.444
3	14 4 18.69	2.2305	17 58 51.0	12.592	3	15 54 58.24	2.3732	25 40 5.1	6.295
4	14 6 32.61	2.2336	18 11 23.3	12.483	4	15 57 20.70	2.3753	25 46 18.3	6.146
5	14 8 46.72	2.2367	18 23 49.0	12.373	5	15 59 43.28	2.3773	25 52 22.6	5.996
6	14 11 1.01	2.2397	18 36 8.1	12.262	6	16 2 5.97	2.3792	25 58 17.8	5.844
7	14 13 15.49	2.2429	18 48 20.5	12.150	7	16 4 28.78	2.3812	26 4 3.9	5.693
8	14 15 30.16	2.2460	19 0 26.1	12.036	8	16 6 51.71	2.3830	26 9 41.0	5.542
9	14 17 45.01	2.2491	19 12 24.8	11.921	9	16 9 14.74	2.3847	26 15 9.0	5.390
10	14 20 0.05	2.2523	19 24 16.6	11.806	10	16 11 37.87	2.3863	26 20 27.8	5.237
11	14 22 15.29	2.2556	19 36 1.5	11.690	11	16 14 1.10	2.3880	26 25 37.5	5.085
12	14 24 30.72	2.2587	19 47 39.4	11.573	12	16 16 24.43	2.3895	26 30 38.0	4.932
13	14 26 46.34	2.2619	19 59 10.2	11.454	13	16 18 47.8	2.3908	26 35 29.3	4.778
14	14 29 2.15	2.2652	20 10 33.9	11.334	14	16 21 11.33	2.3922	26 40 11.4	4.624
15	14 31 18.16	2.2684	20 21 50.3	11.213	15	16 23 34.90	2.3934	26 44 44.2	4.470
16	14 33 34.36	2.2717	20 32 59.5	11.092	16	16 25 58.54	2.3946	26 49 7.8	4.316
17	14 35 50.76	2.2749	20 44 1.4	10.970	17	16 28 22.25	2.3957	26 53 22.1	4.161
18	14 38 7.35	2.2782	20 54 55.9	10.846	18	16 30 46.02	2.3967	26 57 27.1	4.006
19	14 40 24.14	2.2814	21 5 42.9	10.722	19	16 33 9.85	2.3975	27 1 22.8	3.851
20	14 42 41.12	2.2846	21 16 22.5	10.597	20	16 35 33.72	2.3983	27 5 9.2	3.695
21	14 44 58.29	2.2878	21 26 54.5	10.470	21	16 37 57.64	2.3990	27 8 46.2	3.539
22	14 47 15.66	2.2911	21 37 18.9	10.342	22	16 40 21.60	2.3996	27 12 13.9	3.383
23	14 49 33.22	2.2943	S.21 47 35.6	10.214	23	16 42 45.59	2.4002	S.27 15 32.2	3.228
	SATURDAY 26.					MONDAY 28.			
0	14 51 50.98	2.2976	S.21 57 44.6	10.085	0	16 45 9.62	2.4007	S.27 18 41.2	3.072
1	14 54 8.93	2.3008	22 7 45.8	9.955	1	16 47 33.67	2.4009	27 21 40.8	2.915
2	14 56 27.07	2.3040	22 17 39.2	9.824	2	16 49 57.73	2.4011	27 24 31.0	2.758
3	14 58 45.41	2.3072	22 27 24.7	9.692	3	16 52 21.80	2.4012	27 27 11.8	2.602
4	15 1 3.94	2.3103	22 37 2.3	9.560	4	16 54 45.87	2.4012	27 29 43.2	2.446
5	15 3 22.65	2.3134	22 46 31.9	9.426	5	16 57 9.94	2.4012	27 32 5.3	2.290
6	15 5 41.55	2.3166	22 55 53.4	9.291	6	16 59 34.01	2.4010	27 34 18.0	2.133
7	15 8 0.64	2.3197	23 5 6.8	9.156	7	17 1 58.06	2.4007	27 36 21.3	1.977
8	15 10 19.91	2.3227	23 14 12.1	9.020	8	17 4 22.09	2.4003	27 38 15.2	1.820
9	15 12 39.36	2.3257	23 23 9.2	8.883	9	17 6 46.10	2.3999	27 39 59.7	1.663
10	15 14 59.00	2.3288	23 31 58.1	8.746	10	17 9 10.08	2.3993	27 41 34.8	1.507
11	15 17 18.82	2.3318	23 40 38.7	8.607	11	17 11 34.02	2.3986	27 43 0.6	1.352
12	15 19 38.81	2.3347	23 49 10.9	8.467	12	17 13 57.91	2.3978	27 44 17.0	1.195
13	15 21 58.98	2.3376	23 57 34.7	8.327	13	17 16 21.75	2.3969	27 45 24.0	1.039
14	15 24 19.32	2.3404	24 5 50.2	8.187	14	17 18 45.54	2.3959	27 46 21.7	0.884
15	15 26 39.83	2.3433	24 13 57.2	8.045	15	17 21 9.26	2.3947	27 47 10.1	0.728
16	15 29 0.51	2.3461	24 21 55.6	7.903	16	17 23 32.91	2.3935	27 47 49.1	0.573
17	15 31 21.36	2.3488	24 29 45.5	7.760	17	17 25 56.48	2.3923	27 48 18.8	0.418
18	15 33 42.37	2.3515	24 37 26.8	7.616	18	17 28 19.98	2.3909	27 48 39.3	0.264
19	15 36 3.54	2.3541	24 44 59.4	7.472	19	17 30 43.39	2.3893	27 48 50.5	−0.109
20	15 38 24.86	2.3567	24 52 23.4	7.327	20	17 33 6.70	2.3877	27 48 52.4	+0.046
21	15 40 46.34	2.3592	24 59 38.7	7.182	21	17 35 29.91	2.3860	27 48 45.0	0.200
22	15 43 7.97	2.3617	25 6 45.2	7.035	22	17 37 53.02	2.3842	27 48 28.4	0.353
23	15 45 29.74	2.3641	25 13 42.9	6.888	23	17 40 16.01	2.3822	27 48 2.6	0.506
24	15 47 51.66	2.3665	S.25 20 31.8	6.741	24	17 42 38.88	2.3802	S.27 47 27.7	0.658

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 42 38.88	2.3802	S.27 47 27.7	0.658
1	17 45 1.63	2.3781	27 46 43.6	0.811
2	17 47 24 25	2.3758	27 45 50.4	0.963
3	17 49 46.73	2.3735	27 44 48.0	1.115
4	17 52 9.07	2.3712	27 43 36.6	1.265
5	17 54 31.27	2.3687	27 42 16.2	1.416
6	17 56 53.31	2.3660	27 40 46.7	1.567
7	17 59 15.19	2.3632	27 39 8.2	1.716
8	18 1 36.90	2.3605	27 37 20.8	1.864
9	18 3 58.45	2.3577	27 35 24.5	2.013
10	18 6 19.82	2.3546	27 33 19.3	2.161
11	18 8 41.00	2.3515	27 31 5.2	2.308
12	18 11 2.00	2.3484	27 28 42.3	2.455
13	18 13 22.81	2.3452	27 26 10.6	2.601
14	18 15 43.42	2.3418	27 23 30.2	2.746
15	18 18 3.82	2.3383	27 20 41.1	2.891
16	18 20 24.01	2.3348	27 17 43.3	3.035
17	18 22 43.99	2.3313	27 14 36.9	3.178
18	18 25 3.76	2.3276	27 11 22.0	3.320
19	18 27 23.30	2.3238	27 7 58.5	3.462
20	18 29 42.61	2.3199	27 4 26.5	3.603
21	18 32 1.69	2.3160	27 0 46.1	3.743
22	18 34 20.53	2.3120	26 56 57.3	3.883
23	18 36 39.13	2.3080	S.26 53 0.2	4.022

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 38 57.49	2.3039	S.26 48 54.7	4.160
1	18 41 15.60	2.2997	26 44 41.0	4.297
2	18 43 33.45	2.2953	26 40 19.1	4.433
3	18 45 51.04	2.2910	26 35 49.0	4.569
4	18 48 8.37	2.2866	26 31 10.8	4.703
5	18 50 25.43	2.2822	26 26 24.6	4.837
6	18 52 42.23	2.2777	26 21 30.4	4.969
7	18 54 58.75	2.2731	26 16 28.3	5.101
8	18 57 15.00	2.2685	26 11 18.3	5.232
9	18 59 30.97	2.2638	26 6 0.4	5.363
10	19 1 46.65	2.2590	26 0 34.7	5.492
11	19 4 2.05	2.2542	25 55 1.4	5.619
12	19 6 17.16	2.2494	25 49 20.4	5.747
13	19 8 31.98	2.2445	25 43 31.8	5.873
14	19 10 46.50	2.2395	25 37 35.6	5.999
15	19 13 0.72	2.2345	25 31 31.9	6.123
16	19 15 14.64	2.2295	25 25 20.8	6.247
17	19 17 28.26	2.2245	25 19 2.3	6.368
18	19 19 41.58	2.2194	25 12 36.6	6.469
19	19 21 54.59	2.2142	25 6 3.6	6.610
20	19 24 7.29	2.2090	24 59 23.4	6.730
21	19 26 19.67	2.2038	24 52 36.0	6.849
22	19 28 31.74	2.1986	24 45 41.5	6.966
23	19 30 43.50	2.1933	24 38 40.1	7.081
24	19 32 54.94	2.1880	S.24 31 31.8	7.196

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 32 54.94	2.1880	S.24 31 31.8	7.196
1	19 35 6.06	2.1827	24 24 16.6	7.311
2	19 37 16.86	2.1773	24 16 54.5	7.424
3	19 39 27.34	2.1720	24 9 25.7	7.536
4	19 41 37.50	2.1667	24 1 50.2	7.647
5	19 43 47.34	2.1613	23 54 8.0	7.757
6	19 45 56.85	2.1558	23 46 19.3	7.866
7	19 48 6.04	2.1504	23 38 24.1	7.974
8	19 50 14.90	2.1449	23 30 22.4	8.081
9	19 52 23.43	2.1395	23 22 14.4	8.186
10	19 54 31.64	2.1341	23 14 0.1	8.291
11	19 56 39.52	2.1286	23 5 39.5	8.395
12	19 58 47.07	2.1231	22 57 12.7	8.497
13	20 0 54.29	2.1176	22 48 39.8	8.598
14	20 3 1.18	2.1122	22 40 0.9	8.698
15	20 5 7.75	2.1067	22 31 16.0	8.797
16	20 7 13.99	2.1012	22 22 25.2	8.896
17	20 9 19.90	2.0957	22 13 28.5	8.993
18	20 11 25.48	2.0902	22 4 26.0	9.089
19	20 13 30.73	2.0848	21 55 17.8	9.184
20	20 15 35.66	2.0794	21 46 3.9	9.278
21	20 17 40.26	2.0739	21 36 44.4	9.371
22	20 19 44.53	2.0685	21 27 19.4	9.462
23	20 21 48.48	2.0631	S.21 17 49.0	9.553

FRIDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 23 52.10	2.0577	S.21 8 13.1	9.643

PHASES OF THE MOON.

		d	h	m
●	New Moon, . .	3	2	3.3
☽	First Quarter,. .	11	6	46.7
○	Full Moon,. . .	18	12	11.1
☾	Last Quarter, . .	25	3	49.7

		d	h
☾	Apogee,.	8	3.7
☾	Perigee,.	20	2.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
5	Sun	W.	21° 41′ 33″	3382	23° 4′ 10″	3386	24° 26′ 43″	3389	25° 49′ 12″	3393
	Saturn	E.	38 57 43	3009	37 27 42	3019	35 57 53	3030	34 28 17	3040
	α Pegasi	E.	48 52 18	3308	47 28 16	3333	46 4 43	3360	44 41 41	3390
	Mars	E.	67 57 12	3180	66 30 39	3188	65 4 16	3197	63 38 3	3206
	α Arietis	E.	89 29 21	2969	87 58 30	2977	86 27 48	2985	84 57 16	2992
6	Sun	W.	32 40 15	3419	34 2 10	3424	35 23 59	3429	36 45 43	3434
	Saturn	E.	27 3 33	3096	25 35 18	3108	24 7 18	3121	22 39 34	3137
	Mars	E.	56 29 24	3244	55 4 7	3252	53 38 59	3259	52 13 59	3265
	α Arietis	E.	77 26 52	3027	75 57 13	3034	74 27 43	3040	72 58 20	3047
	Aldebaran	E.	109 11 20	3091	107 43 0	3097	106 14 47	3102	104 46 40	3106
7	Sun	W.	43 32 59	3457	44 54 11	3461	46 15 19	3464	47 36 23	3467
	Mars	E.	45 10 55	3296	43 46 39	3302	42 22 30	3307	40 58 27	3313
	α Arietis	E.	65 33 14	3073	64 4 32	3078	62 35 56	3082	61 7 25	3087
	Aldebaran	E.	97 27 25	3128	95 59 49	3132	94 32 18	3135	93 4 51	3138
8	Sun	W.	54 20 58	3479	55 41 46	3479	57 2 34	3480	58 23 21	3480
	Mars	E.	33 59 35	3335	32 36 4	3338	31 12 37	3343	29 49 15	3347
	α Arietis	E.	53 45 58	3103	52 17 52	3105	50 49 48	3107	49 21 47	3109
	Aldebaran	E.	85 48 30	3151	84 21 22	3153	82 54 17	3154	81 27 13	3155
9	Sun	W.	65 7 23	3473	66 28 17	3471	67 49 13	3468	69 10 13	3465
	Venus	W.	22 0 20	3334	23 23 52	3332	24 47 27	3327	26 11 7	3323
	α Arietis	E.	42 2 6	3113	40 34 12	3114	39 6 19	3114	37 38 26	3113
	Aldebaran	E.	74 12 4	3156	72 45 2	3154	71 17 58	3153	69 50 53	3153
	Pollux	E.	116 41 42	3088	115 13 18	3086	113 44 51	3083	112 16 21	3079
10	Sun	W.	75 56 22	3439	77 17 54	3432	78 39 34	3426	80 1 21	3418
	Fomalhaut	W.	41 26 13	3850	42 40 24	3799	43 55 27	3753	45 11 18	3709
	Venus	W.	33 10 52	3294	34 35 10	3287	35 59 37	3279	37 24 13	3271
	Saturn	W.	20 43 48	3160	22 10 45	3144	23 38 1	3130	25 5 34	3116
	α Arietis	E.	30 18 55	3113	28 51 1	3114	27 23 8	3115	25 55 17	3118
	Aldebaran	E.	62 34 57	3140	61 7 36	3138	59 40 12	3134	58 12 44	3131
	Pollux	E.	104 52 37	3056	103 23 33	3051	101 54 23	3044	100 25 5	3037
11	Sun	W.	86 52 39	3372	88 15 27	3362	89 38 27	3351	91 1 40	3338
	Fomalhaut	W.	51 41 13	3529	53 1 5	3497	54 21 32	3468	55 42 32	3440
	Venus	W.	44 29 48	3222	45 55 31	3211	47 21 27	3199	48 47 37	3187
	Saturn	W.	32 27 19	3053	33 56 26	3041	35 25 48	3028	36 55 26	3016
	α Pegasi	W.	29 45 2	3847	30 59 16	3765	32 14 55	3691	33 31 52	3624
	Aldebaran	E.	50 54 17	3111	49 26 21	3107	47 58 20	3104	46 30 15	3101
	Pollux	E.	92 56 13	2995	91 25 54	2986	89 55 24	2976	88 24 41	2963
12	Sun	W.	98 1 19	3274	99 26 1	3259	100 51 1	3244	102 16 18	3229
	Fomalhaut	W.	62 35 12	3310	63 59 12	3287	65 23 30	3263	66 48 34	3239
	Venus	W.	56 2 19	3119	57 30 6	3104	58 58 11	3089	60 26 34	3073
	Saturn	W.	44 27 37	2948	45 58 55	2934	47 30 31	2919	49 2 26	2905
	α Pegasi	W.	40 12 45	3367	41 35 39	3325	42 59 21	3287	44 23 48	3251
	Aldebaran	E.	39 8 59	3091	37 40 39	3092	36 12 20	3095	34 44 4	3099
	Pollux	E.	80 47 33	2905	79 15 21	2892	77 42 52	2879	76 10 6	2866
13	Sun	W.	109 27 23	3147	110 54 36	3129	112 22 10	3112	113 50 5	3094

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
5	Sun	W.	27° 11′ 36″	3399	28° 33′ 54″	3403	29° 56′ 7″	3408	31° 18′ 14″	3414
	Saturn	E.	32 58 54	3051	31 29 44	3061	30 0 47	3072	28 32 3	3083
	α Pegasi	E.	43 19 13	3421	41 57 20	3454	40 36 5	3491	39 15 31	3530
	Mars	E.	62 12 1	3214	60 46 8	3221	59 20 24	3229	57 54 49	3237
	α Arietis	E.	83 26 53	2999	81 56 39	3007	80 26 35	3014	78 56 39	3021
6	Sun	W.	38 7 21	3439	39 28 53	3444	40 50 20	3448	42 11 42	3453
	Saturn	E.	21 12 9	3154	19 45 5	3174	18 18 25	3198	16 52 14	3228
	Mars	E.	50 49 7	3272	49 24 23	3278	47 59 46	3285	46 35 17	3291
	α Arietis	E.	71 29 5	3052	69 59 57	3058	68 30 56	3064	67 2 2	3069
	Aldebaran	E.	103 18 38	3111	101 50 42	3115	100 22 51	3119	98 55 5	3124
7	Sun	W.	48 57 24	3470	50 18 22	3473	51 39 16	3475	53 0 8	3477
	Mars	E.	39 34 30	3317	38 10 38	3322	36 46 52	3326	35 23 11	3331
	α Arietis	E.	59 38 59	3091	58 10 38	3094	56 42 21	3097	55 14 8	3100
	Aldebaran	E.	91 37 28	3142	90 10 9	3144	88 42 53	3147	87 15 40	3149
8	Sun	W.	59 44 8	3480	61 4 55	3479	62 25 43	3478	63 46 32	3476
	Mars	E.	28 25 58	3351	27 2 46	3355	25 39 38	3360	24 16 36	3365
	α Arietis	E.	47 53 48	3110	46 25 51	3111	44 57 55	3112	43 30 0	3113
	Aldebaran	E.	80 0 10	3156	78 33 8	3157	77 6 7	3157	75 39 6	3156
9	Sun	W.	70 31 16	3461	71 52 24	3455	73 13 38	3451	74 34 57	3446
	Venus	W.	27 34 52	3318	28 58 43	3313	30 22 39	3307	31 46 42	3301
	α Arietis	E.	36 10 32	3113	34 42 38	3113	33 14 44	3113	31 46 50	3112
	Aldebaran	E.	68 23 47	3151	66 56 39	3148	65 29 28	3146	64 2 14	3143
	Pollux	E.	110 47 46	3076	109 19 7	3072	107 50 23	3067	106 21 33	3062
10	Sun	W.	81 23 17	3410	82 45 22	3401	84 7 37	3392	85 30 3	3383
	Fomalhaut	W.	46 27 55	3669	47 45 15	3631	49 3 16	3595	50 21 56	3561
	Venus	W.	38 48 58	3262	40 13 54	3253	41 39 0	3243	43 4 18	3233
	Saturn	W.	26 33 24	3103	28 1 30	3091	29 29 51	3078	30 58 27	3065
	α Arietis	E.	24 27 29	3122	22 59 46	3127	21 32 9	3135	20 4 42	3148
	Aldebaran	E.	56 45 12	3127	55 17 35	3124	53 49 54	3119	52 22 8	3115
	Pollux	E.	98 55 38	3030	97 26 2	3022	95 56 16	3014	94 26 20	3005
11	Sun	W.	92 25 7	3326	93 48 48	3314	95 12 43	3301	96 36 53	3288
	Fomalhaut	W.	57 4 3	3413	58 26 5	3386	59 48 38	3359	61 11 41	3335
	Venus	W.	50 14 2	3174	51 40 42	3161	53 7 38	3148	54 34 50	3133
	Saturn	W.	38 25 19	3003	39 55 28	2989	41 25 54	2976	42 56 37	2962
	α Pegasi	W.	34 50 0	3564	36 9 14	3508	37 29 29	3457	38 50 41	3411
	Aldebaran	E.	45 2 6	3097	43 33 53	3095	42 5 37	3093	40 37 19	3091
	Pollux	E.	86 53 44	2954	85 22 34	2942	83 51 9	2931	82 19 29	2918
12	Sun	W.	103 41 53	3213	105 7 47	3198	106 33 59	3181	108 0 31	3164
	Fomalhaut	W.	68 13 57	3217	69 39 46	3194	71 6 2	3173	72 32 44	3152
	Venus	W.	61 55 17	3057	63 24 19	3040	64 53 42	3023	66 23 26	3006
	Saturn	W.	50 34 39	2889	52 7 12	2874	53 40 4	2858	55 13 17	2842
	α Pegasi	W.	45 48 57	3216	47 14 47	3182	48 41 18	3150	50 8 27	3120
	Aldebaran	E.	33 15 53	3106	31 47 51	3115	30 20 0	3128	28 52 25	3148
	Pollux	E.	74 37 3	2651	73 3 41	2637	71 30 1	2621	69 56 1	2807
13	Sun	W.	115 18 22	3075	116 47 2	3057	118 16 4	3039	119 45 29	3019

JANUARY, 1878.

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
13	Fomalhaut	W.	73° 59′ 51″	3130	75° 27′ 24″	3109	76° 55′ 23″	3088	78° 23′ 47″	3068
	Venus	W.	67 53 31	2989	69 23 58	2971	70 54 47	2953	72 25 59	2934
	Saturn	W.	56 46 51	2825	58 20 46	2808	59 55 3	2792	61 29 41	2775
	α Pegasi	W.	51 36 12	3091	53 4 33	3061	54 33 30	3034	56 3 1	3006
	Mars	W.	23 46 30	3050	25 15 41	3026	26 45 21	3004	28 15 29	2982
	Pollux	E.	68 21 42	2791	66 47 2	2775	65 12 2	2760	63 36 41	2743
	Regulus	E.	105 15 25	2779	103 40 30	2764	102 5 15	2747	100 29 38	2731
14	Sun	W.	121 15 18	3000	122 45 31	2981	124 16 8	2962	125 47 9	2942
	Fomalhaut	W.	85 51 58	2969	87 22 49	2950	88 54 4	2932	90 25 42	2915
	Venus	W.	80 7 59	2838	81 41 37	2818	83 15 41	2798	84 50 11	2779
	Saturn	W.	69 28 37	2687	71 5 35	2668	72 42 58	2650	74 20 45	2632
	α Pegasi	W.	63 38 51	2880	65 11 36	2855	66 44 53	2831	68 18 40	2808
	Mars	W.	35 52 51	2877	37 25 39	2856	38 58 54	2836	40 32 35	2816
	α Arietis	W.	20 5 0	2775	21 40 0	2739	23 15 48	2707	24 52 19	2678
	Pollux	E.	55 34 26	2659	53 56 51	2642	52 18 53	2624	50 40 31	2607
	Regulus	E.	92 25 54	2644	90 47 59	2626	89 9 40	2608	87 30 56	2590
15	Sun	W.	133 28 27	2844	135 1 58	2824	136 35 55	2805	138 10 17	2786
	Fomalhaut	W.	98 9 22	2831	99 43 9	2817	101 17 15	2802	102 51 40	2789
	Venus	W.	92 49 16	2678	94 26 25	2657	96 4 2	2638	97 42 6	2618
	Saturn	W.	82 35 58	2539	84 16 17	2520	85 57 2	2502	87 38 12	2484
	α Pegasi	W.	76 15 2	2698	77 51 45	2678	79 28 55	2657	81 6 33	2637
	Mars	W.	48 27 38	2714	50 3 59	2695	51 40 46	2675	53 17 59	2655
	α Arietis	W.	33 4 9	2551	34 44 12	2528	36 24 46	2506	38 5 51	2485
	Pollux	E.	42 22 48	2522	40 42 5	2505	39 0 59	2489	37 19 30	2472
	Regulus	E.	79 11 1	2499	77 29 46	2480	75 48 5	2462	74 5 58	2444
16	Venus	W.	105 59 8	2521	107 39 52	2502	109 21 3	2483	111 2 40	2465
	Saturn	W.	96 10 25	2395	97 54 7	2378	99 38 13	2361	101 22 44	2345
	α Pegasi	W.	89 21 19	2544	91 1 31	2527	92 42 7	2510	94 23 6	2495
	Mars	W.	61 30 40	2561	63 10 29	2542	64 50 44	2524	66 31 24	2507
	α Arietis	W.	46 38 35	2384	48 22 32	2366	50 6 56	2347	51 51 47	2330
	Aldebaran	W.	17 41 32	3241	19 6 53	3079	20 35 28	2950	22 6 43	2845
	Pollux	E.	28 46 41	2402	27 3 9	2391	25 19 22	2382	23 35 22	2375
	Regulus	E.	65 29 2	2355	63 44 23	2338	61 59 19	2321	60 13 50	2305
17	Mars	W.	75 0 39	2425	76 43 38	2410	78 26 58	2396	80 10 39	2382
	α Arietis	W.	60 42 15	2247	62 29 32	2233	64 17 11	2218	66 5 11	2204
	Aldebaran	W.	30 10 46	2519	31 51 33	2476	33 33 20	2438	35 16 0	2404
	Regulus	E.	51 20 36	2228	49 32 50	2214	47 44 43	2200	45 56 15	2187
	Spica	E.	105 22 43	2231	103 35 2	2216	101 46 59	2203	99 58 36	2190
18	Mars	W.	88 53 47	2321	90 39 16	2311	92 24 59	2302	94 10 56	2293
	α Arietis	W.	75 10 5	2145	76 59 56	2134	78 50 3	2125	80 40 24	2116
	Aldebaran	W.	44 0 2	2278	45 46 34	2260	47 33 33	2249	49 20 58	2226
	Regulus	E.	36 49 16	2129	34 59 1	2120	33 8 32	2111	31 17 49	2102
	Spica	E.	90 51 57	2132	89 1 46	2122	87 11 20	2112	85 20 39	2104
19	α Arietis	W.	89 55 11	2082	91 46 38	2078	93 38 11	2074	95 29 50	2071
	Aldebaran	W.	58 23 19	2167	60 12 37	2159	62 2 7	2151	63 51 48	2145
	Spica	E.	76 4 21	2071	74 12 37	2066	72 20 45	2062	70 28 48	2059

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
13	Fomalhaut	W.	79° 52′ 36″	3047	81° 21′ 50″	3028	82° 51′ 28″	3008	84° 21′ 31″	2989
	Venus	W.	73 57 35	2916	75 29 34	2896	77 1 58	2877	78 34 46	2858
	Saturn	W.	63 4 42	2757	64 40 6	2740	66 15 53	2722	67 52 3	2704
	α Pegasi	W.	57 33 6	2980	59 3 44	2954	60 34 54	2928	62 6 37	2904
	Mars	W.	29 46 4	2961	31 17 6	2940	32 48 34	2919	34 20 29	2898
	Pollux	E.	62 0 58	2727	60 24 54	2710	58 48 27	2693	57 11 38	2676
	Regulus	E.	98 53 39	2713	97 17 17	2697	95 40 33	2679	94 3 25	2662
14	Sun	W.	127 18 35	2922	128 50 26	2903	130 22 41	2883	131 55 21	2863
	Fomalhaut	W.	91 57 42	2897	93 30 5	2880	95 2 49	2863	96 35 55	2847
	Venus	W.	86 25 7	2759	88 0 29	2738	89 36 18	2718	91 12 34	2698
	Saturn	W.	75 58 57	2613	77 37 34	2594	79 16 37	2576	80 56 5	2558
	α Pegasi	W.	69 52 58	2785	71 27 45	2763	73 3 2	2741	74 38 48	2719
	Mars	W.	42 6 42	2795	43 41 16	2775	45 16 17	2755	46 51 44	2735
	α Arietis	W.	26 29 29	2650	28 7 16	2623	29 45 40	2598	31 24 38	2574
	Pollux	E.	49 1 46	2590	47 22 37	2572	45 43 4	2556	44 3 8	2538
	Regulus	E.	85 51 47	2572	84 12 14	2553	82 32 15	2535	80 51 51	2517
15	Sun	W.	139 45 3	2766	141 20 15	2748	142 55 51	2729	144 31 52	2710
	Fomalhaut	W.	104 26 22	2776	106 1 21	2765	107 36 35	2754	109 12 3	2744
	Venus	W.	99 20 36	2599	100 59 33	2578	102 38 58	2559	104 18 50	2540
	Saturn	W.	89 19 48	2466	91 1 49	2448	92 44 16	2430	94 27 8	2412
	α Pegasi	W.	82 44 38	2617	84 23 10	2598	86 2 8	2580	87 41 31	2561
	Mars	W.	54 55 39	2636	56 33 45	2616	58 12 18	2598	59 51 16	2579
	α Arietis	W.	39 47 26	2463	41 29 31	2443	43 12 4	2423	44 55 6	2404
	Pollux	E.	35 37 38	2457	33 55 24	2443	32 12 50	2428	30 29 55	2415
	Regulus	E.	72 23 26	2426	70 40 28	2408	68 57 5	2390	67 13 16	2373
16	Venus	W.	112 44 42	2447	114 27 10	2430	116 10 2	2412	117 53 19	2396
	Saturn	W.	103 7 38	2328	104 52 56	2313	106 38 36	2298	108 24 39	2283
	α Pegasi	W.	96 4 26	2480	97 46 7	2465	99 28 9	2452	101 10 30	2440
	Mars	W.	68 12 28	2490	69 53 55	2472	71 35 47	2456	73 18 2	2441
	α Arietis	W.	53 37 3	2312	55 22 45	2296	57 8 51	2279	58 55 21	2263
	Aldebaran	W.	23 40 13	2757	25 15 37	2684	26 52 38	2621	28 31 5	2566
	Pollux	E.	21 51 11	2371	20 6 54	2369	18 22 35	2374	16 38 23	2387
	Regulus	E.	58 27 58	2289	56 41 42	2273	54 55 3	2258	53 8 1	2242
17	Mars	W.	81 54 40	2368	83 39 0	2356	85 23 38	2344	87 8 34	2332
	α Arietis	W.	67 53 32	2191	69 42 13	2179	71 31 12	2167	73 20 30	2155
	Aldebaran	W.	36 59 29	2374	38 43 41	2346	40 28 33	2322	42 14 1	2299
	Regulus	E.	44 7 28	2174	42 18 22	2162	40 28 57	2151	38 39 15	2139
	Spica	E.	98 9 53	2177	96 20 51	2165	94 31 30	2153	92 41 52	2142
18	Mars	W.	95 57 6	2285	97 43 28	2277	99 30 2	2270	101 16 46	2264
	α Arietis	W.	82 30 59	2108	84 21 46	2101	86 12 44	2094	88 3 53	2088
	Aldebaran	W.	51 8 47	2212	52 56 57	2198	54 45 27	2186	56 34 15	2176
	Regulus	E.	29 26 53	2094	27 35 45	2088	25 44 27	2081	23 52 59	2075
	Spica	E.	83 29 46	2096	81 38 41	2088	79 47 24	2082	77 55 57	2076
19	α Arietis	W.	97 21 34	2068	99 13 22	2067	101 5 12	2066	102 57 4	2065
	Aldebaran	W.	65 41 39	2140	67 31 37	2136	69 21 42	2132	71 11 52	2130
	Spica	E.	68 36 46	2057	66 44 40	2055	64 52 32	2054	63 0 22	2053

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
20	α Arietis	W.	104° 48′ 57″	2066	106° 40′ 49″	2067	108° 32′ 39″	2069	110° 24′ 26″	2072
	Aldebaran	W.	73 2 5	2128	74 52 21	2128	76 42 37	2128	78 32 53	2130
	Pollux	W.	30 8 28	2088	31 59 46	2085	33 51 9	2083	35 42 34	2082
	Spica	E.	61 8 11	2054	59 16 1	2055	57 23 53	2057	55 31 47	2059
	Antares	E.	106 58 56	2048	105 6 37	2050	103 14 20	2051	101 22 5	2053
21	Aldebaran	W.	87 43 21	2147	89 33 8	2153	91 22 47	2160	93 12 15	2167
	Pollux	W.	44 59 26	2094	46 50 35	2098	48 41 37	2103	50 32 31	2109
	Spica	E.	46 12 36	2081	44 21 8	2088	42 29 51	2095	40 38 44	2102
	Antares	E.	92 2 2	2073	90 10 22	2079	88 18 51	2086	86 27 30	2092
	Sun	E.	145 26 27	2387	143 42 34	2394	141 58 50	2400	140 15 15	2406
22	Aldebaran	W.	102 16 36	2212	104 4 45	2223	105 52 38	2235	107 40 14	2247
	Pollux	W.	59 44 28	2147	61 34 15	2157	63 23 47	2167	65 13 5	2177
	Regulus	W.	22 43 37	2138	24 33 38	2147	26 23 25	2157	28 12 57	2167
	Spica	E.	31 26 22	2151	29 36 40	2162	27 47 15	2174	25 58 9	2188
	Antares	E.	77 13 38	2135	75 23 32	2144	73 33 40	2154	71 44 3	2165
	Sun	E.	131 40 1	2449	129 57 36	2460	128 15 26	2470	126 33 31	2481
23	Pollux	W.	74 15 34	2233	76 3 13	2245	77 50 34	2257	79 37 37	2270
	Regulus	W.	37 16 38	2223	39 4 31	2235	40 52 6	2248	42 39 22	2260
	Antares	E.	62 40 6	2222	60 52 11	2235	59 4 35	2247	57 17 17	2259
	Sun	E.	118 7 57	2542	116 27 42	2555	114 47 45	2568	113 8 6	2581
24	Pollux	W.	88 28 10	2335	90 13 19	2348	91 58 9	2362	93 42 39	2375
	Regulus	W.	51 31 3	2325	53 16 26	2339	55 1 29	2352	56 46 13	2365
	Antares	E.	48 25 29	2324	46 40 5	2338	44 55 1	2351	43 10 16	2365
	Sun	E.	104 54 31	2651	103 16 45	2666	101 39 19	2680	100 2 12	2695
25	Pollux	W.	102 20 21	2442	104 2 56	2456	105 45 11	2470	107 27 7	2482
	Regulus	W.	65 25 4	2432	67 7 53	2445	68 50 23	2459	70 32 34	2472
	Antares	E.	34 31 23	2432	32 48 34	2445	31 6 4	2459	29 23 53	2472
	Sun	E.	92 1 26	2766	90 26 14	2781	88 51 21	2795	87 16 46	2809
26	Regulus	W.	78 58 57	2536	80 39 20	2548	82 19 26	2561	83 59 15	2573
	Spica	W.	25 2 30	2558	26 42 23	2567	28 22 3	2577	30 1 29	2588
	Sun	E.	79 28 26	2878	77 55 39	2892	76 23 10	2905	74 50 57	2918
27	Regulus	W.	92 14 13	2632	93 52 25	2643	95 30 22	2654	97 8 4	2664
	Spica	W.	38 15 0	2641	39 52 59	2652	41 30 43	2663	43 8 13	2672
	Sun	E.	67 13 59	2981	65 43 23	2993	64 13 2	3005	62 42 56	3017
28	Spica	W.	51 12 21	2722	52 48 31	2732	54 24 28	2741	56 0 13	2751
	Sun	E.	55 15 59	3073	53 47 17	3084	52 18 48	3095	50 50 32	3105
29	Spica	W.	63 55 56	2795	65 30 30	2804	67 4 53	2812	68 39 5	2820
	Antares	W.	18 2 11	2792	19 36 50	2801	21 11 17	2808	22 45 34	2817
	Sun	E.	43 32 15	3154	42 5 11	3163	40 38 18	3173	39 11 36	3182
30	Spica	W.	76 27 31	2859	78 0 42	2866	79 33 44	2874	81 6 36	2881
	Antares	W.	30 34 23	2855	32 7 39	2863	33 40 45	2870	35 13 42	2877
	Sun	E.	32 0 45	3225	30 35 5	3233	29 9 35	3242	27 44 15	3249

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
20	α Arietis	W.	112° 16′ 9″	2075	114° 7′ 47″	2079	115° 59′ 19″	2083	117° 50′ 44″	2089
	Aldebaran	W.	80 23 7	2132	82 13 18	2134	84 3 25	2138	85 53 26	2142
	Pollux	W.	37 34 1	2083	39 25 27	2084	41 16 51	2086	43 8 11	2090
	Spica	E.	53 39 45	2062	51 47 48	2066	49 55 57	2071	48 4 13	2075
	Antares	E.	99 29 54	2056	97 37 47	2059	95 45 45	2064	93 53 50	2068
21	Aldebaran	W.	95 1 33	2174	96 50 39	2183	98 39 32	2192	100 28 12	2202
	Pollux	W.	52 23 16	2116	54 13 50	2122	56 4 15	2130	57 54 28	2139
	Spica	E.	38 47 48	2111	36 57 5	2120	35 6 36	2129	33 16 21	2139
	Antares	E.	84 36 19	2100	82 45 20	2108	80 54 33	2116	79 3 59	2125
	Sun	E.	138 31 49	2414	136 48 34	2422	135 5 30	2431	133 22 39	2440
22	Aldebaran	W.	109 27 31	2260	111 14 30	2273	113 1 9	2287	114 47 28	2301
	Pollux	W.	67 2 7	2187	68 50 54	2198	70 39 24	2209	72 27 38	2221
	Regulus	W.	30 2 14	2178	31 51 15	2188	33 40 0	2200	35 28 28	2212
	Spica	E.	24 9 23	2202	22 20 58	2218	20 32 57	2235	18 45 22	2254
	Antares	E.	69 54 42	2176	68 5 38	2186	66 16 50	2198	64 28 19	2210
	Sun	E.	124 51 51	2492	123 10 27	2504	121 29 20	2517	119 48 30	2529
23	Pollux	W.	81 24 21	2282	83 10 47	2295	84 56 54	2308	86 42 42	2322
	Regulus	W.	44 26 20	2273	46 12 59	2285	47 59 20	2299	49 45 21	2312
	Antares	E.	55 30 17	2272	53 43 36	2285	51 57 15	2298	50 11 12	2311
	Sun	E.	111 28 45	2595	109 49 43	2609	108 11 0	2623	106 32 36	2637
24	Pollux	W.	95 26 50	2388	97 10 42	2402	98 54 14	2415	100 37 27	2429
	Regulus	W.	58 30 38	2379	60 14 43	2392	61 58 29	2405	63 41 56	2419
	Antares	E.	41 25 51	2378	39 41 45	2391	37 57 58	2405	36 14 31	2419
	Sun	E.	98 25 25	2708	96 48 56	2723	95 12 47	2738	93 36 57	2752
25	Pollux	W.	109 8 45	2496	110 50 4	2509	112 31 5	2522	114 11 47	2535
	Regulus	W.	72 14 27	2485	73 56 2	2498	75 37 18	2511	77 18 16	2523
	Antares	E.	27 42 0	2485	26 0 26	2498	24 19 10	2511	22 38 12	2525
	Sun	E.	85 42 30	2823	84 8 32	2837	82 34 52	2851	81 1 30	2865
26	Regulus	W.	85 38 47	2585	87 18 3	2597	88 57 2	2609	90 35 45	2620
	Spica	W.	31 40 40	2599	33 19 37	2610	34 58 19	2620	36 36 47	2631
	Sun	E.	73 19 1	2931	71 47 21	2944	70 15 58	2957	68 44 51	2969
27	Regulus	W.	98 45 32	2675	100 22 45	2686	101 59 44	2696	103 36 29	2707
	Spica	W.	44 45 30	2683	46 22 33	2693	47 59 22	2703	49 35 58	2713
	Sun	E.	61 13 4	3029	59 43 27	3040	58 14 4	3052	56 44 55	3062
28	Spica	W.	57 35 45	2760	59 11 5	2769	60 46 14	2778	62 21 11	2787
	Sun	E.	49 22 28	3115	47 54 37	3125	46 26 58	3135	44 59 31	3144
29	Spica	W.	70 13 7	2828	71 46 58	2836	73 20 39	2844	74 54 10	2852
	Antares	W.	24 19 40	2825	25 53 36	2832	27 27 22	2840	29 0 58	2848
	Sun	E.	37 45 5	3190	36 18 44	3199	34 52 34	3208	33 26 34	3217
30	Spica	W.	82 39 19	2888	84 11 53	2895	85 44 18	2902	87 16 34	2909
	Antares	W.	36 46 30	2884	38 19 9	2892	39 51 38	2898	41 23 59	2905
	Sun	E.	26 19 4	3258	24 54 3	3265	23 29 11	3273	22 4 28	3281

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	21 0 8.43	10.186	S. 17 2 52.3	+42.88	16 15.97	68.25	13 52.18	+0.327
Sat.	2	21 4 12.46	10.151	16 45 34.2	43.62	16 15.82	68.14	13 59.64	0.293
Sun.	3	21 8 15.68	10.116	16 27 58.7	44.34	16 15.67	68.02	14 6.28	0.259
Mon.	4	21 12 18.07	10.081	16 10 6.0	45.04	16 15.51	67.91	14 12.09	0.225
Tues.	5	21 16 19.62	10.047	15 51 56.7	45.73	16 15.35	67.79	14 17.07	0.191
Wed.	6	21 20 20.35	10.013	15 33 31.1	46.40	16 15.19	67.68	14 21.24	0.157
Thur.	7	21 24 20.27	9.979	15 14 49.7	47.05	16 15.02	67.56	14 24.60	0.123
Frid.	8	21 28 19.37	9.945	14 55 53.0	47.68	16 14.85	67.45	14 27.12	0.089
Sat.	9	21 32 17.66	9.912	14 36 41.3	48.29	16 14.67	67.34	14 28.86	0.055
Sun.	10	21 36 15.14	9.878	14 17 15.1	48.88	16 14.49	67.23	14 29.78	+0.022
Mon.	11	21 40 11.81	9.845	13 57 35.0	49.46	16 41.31	67.12	14 29.90	−0.011
Tues.	12	21 44 7.69	9.813	13 37 41.2	50.02	16 14.12	67.01	14 29.22	0.044
Wed.	13	21 48 2.80	9.781	13 17 3.0	50.57	16 13.93	66.90	14 27.78	0.076
Thur.	14	21 51 57.15	9.749	12 57 14.0	51.09	16 13.73	66.79	14 25.58	0.107
Frid.	15	21 55 50.75	9.718	12 36 41.5	51.60	16 13.53	66.69	14 22.64	0.138
Sat.	16	21 59 43.62	9.688	12 15 57.0	52.09	16 13.33	66.58	14 18.97	0.168
Sun.	17	22 3 35.77	9.658	11 55 0.8	52.57	16 13.12	66.48	14 14.58	0.197
Mon.	18	22 7 27.22	9.629	11 33 53.3	53.03	16 12.91	66.38	14 9.48	0.226
Tues.	19	22 11 17.98	9.601	11 12 34.9	53.48	16 12.69	66.28	14 3.70	0.254
Wed.	20	22 15 8.07	9.574	10 51 6.0	53.91	16 12.47	66.18	13 57.26	0.281
Thur.	21	22 18 57.56	9.547	10 29 26.9	54.33	16 12.24	66.09	13 50.18	0.307
Frid.	22	22 22 46.38	9.521	10 7 38.1	54.73	16 12.01	66.00	13 42.47	0.333
Sat.	23	22 26 34.58	9.496	9 45 39.9	55.11	16 11.78	65.91	13 34.15	0.358
Sun.	24	22 30 22.20	9.472	9 23 32.8	55.48	16 11.54	65.82	13 25.24	0.382
Mon.	25	22 34 9.24	9.448	9 1 17.0	55.83	16 11.30	65.74	13 15.76	0.406
Tues.	26	22 37 55.71	9.425	8 38 53.0	56.16	16 11.06	65.66	13 5.70	0.429
Wed.	27	22 41 41.64	9.403	8 16 21.4	56.48	16 10.82	65.58	12 55.11	0.452
Thur.	28	22 45 27.04	9.381	7 53 42.4	56.78	16 10.57	65.50	12 43.98	0.474
Frid.	29	22 49 11.92	9.360	S. 7 30 56.5	+57.05	16 10.32	65.42	12 32.35	0.495

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, *to be subtracted from Mean Time.*		Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.		
		Apparent Right Ascension.			Diff. for 1 hour.	*Apparent* Declination.			Diff. for 1 hour.						
		h	m	s	s	°	′	″	″	m	s	s	h	m	s
Frid.	1	21	0	6.07	10.185	S. 17	3	2.3	+42.87	13	52.10	+0.327	20	46	13.97
Sat.	2	21	4	10.09	10.150	16	45	44.4	43.61	13	59.56	0.293	20	50	10.53
Sun.	3	21	8	13.30	10.116	16	28	9.1	44.33	14	6.22	0.259	20	54	7.08
Mon.	4	21	12	15.68	10.081	16	10	16.7	45.03	14	12.04	0.225	20	58	3.64
Tues.	5	21	16	17.23	10.047	15	52	7.5	45.72	14	17.03	0.191	21	2	0.20
Wed.	6	21	20	17.96	10.013	15	33	42.2	46.39	14	21.20	0.157	21	5	56.76
Thur.	7	21	24	17.88	9.979	15	15	1.0	47.04	14	24.57	0.123	21	9	53.31
Frid.	8	21	28	16.98	9.945	14	56	4.4	47.67	14	27.11	0.089	21	13	49.87
Sat.	9	21	32	15.27	9.912	14	36	52.9	48.28	14	28.85	0.055	21	17	46.42
Sun.	10	21	36	12.75	9.878	14	17	26.9	48.87	14	29.77	+0.022	21	21	42.98
Mon.	11	21	40	9.43	9.845	13	57	46.9	49.45	14	29.90	−0.011	21	25	39.53
Tues.	12	21	44	5.32	9.813	13	37	53.2	50.01	14	29.23	0.044	21	29	36.09
Wed.	13	21	48	0.44	9.781	13	17	46.2	50.56	14	27.80	0.076	21	33	32.64
Thur.	14	21	51	54.80	9.750	12	57	26.3	51.09	14	25.60	0.107	21	37	29.20
Frid.	15	21	55	48.42	9.719	12	36	53.9	51.60	14	22.67	0.138	21	41	25.75
Sat.	16	21	59	41.31	9.689	12	16	9.4	52.09	14	19.00	0.168	21	45	22.31
Sun.	17	22	3	33.48	9.659	11	55	13.2	52.57	14	14.62	0.197	21	49	18.86
Mon.	18	22	7	24.95	9.630	11	34	5.8	53.03	14	9.53	0.226	21	53	15.42
Tues.	19	22	11	15.73	9.602	11	12	47.4	53.48	14	3.76	0.254	21	57	11.97
Wed.	20	22	15	5.86	9.575	10	51	18.5	53.91	13	57.33	0.281	22	1	8.53
Thur.	21	22	18	55.35	9.548	10	29	39.4	54.33	13	50.26	0.307	22	5	5.09
Frid.	22	22	22	44.20	9.522	10	7	50.6	54.73	13	42.55	0.333	22	9	1.65
Sat.	23	22	26	32.43	9.497	9	45	52.3	55.11	13	34.23	0.358	22	12	58.20
Sun.	24	22	30	20.08	9.473	9	23	45.1	55.48	13	25.33	0.382	22	16	54.75
Mon.	25	22	34	7.15	9.449	9	1	29.3	55.83	13	15.85	0.406	22	20	51.30
Tues.	26	22	37	53.65	9.426	8	39	5.3	56.16	13	5.79	0.429	22	24	47.86
Wed.	27	22	41	39.61	9.404	8	16	33.6	56.48	12	55.20	0.452	22	28	44.41
Thur.	28	22	45	25.05	9.382	7	53	54.5	56.78	12	44.08	0.474	22	32	40.97
Frid.	29	22	49	9.97	9.361	S. 7	31	8.4	+57.06	12	32.45	0.495	22	36	37.52

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

Diff. for 1 hour.
+9^s.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	° ′ ″	″	″			h m s
1	32	312 33 46.2	33 30.2	152.22	−0.54	9.9937360	+28.2	3 13 14.29
2	33	313 34 39.0	34 22.8	152.18	0.40	.9938043	28.7	3 9 18.38
3	34	314 35 30.6	35 14.2	152.13	0.26	.9938739	29.2	3 5 22.47
4	35	315 36 20.9	36 4.5	152.06	+0.13	.9939446	29.7	3 1 26.56
5	36	316 37 9.8	36 53.2	152.01	0.00	.9940167	30.2	2 57 30.65
6	37	317 37 57.2	37 40.4	151.95	+0.11	.9940901	30.8	2 53 34.75
7	38	318 38 43.3	38 26.3	151.89	0.20	.9941649	31.4	2 49 38.84
8	39	319 39 27.9	39 10.8	151.82	0.27	.9942410	32.0	2 45 42.92
9	40	320 40 10.8	39 53.7	151.75	0.31	.9943187	32.7	2 41 47.00
10	41	321 40 52.0	40 34.7	151.68	0.31	.9943981	33.4	2 37 51.09
11	42	322 41 31.6	41 14.1	151.61	0.28	.9944794	34.2	2 33 55.18
12	43	323 42 9.4	41 51.7	151.54	0.23	.9945625	35.0	2 29 59.27
13	44	324 42 45.5	42 27.7	151.47	0.16	.9946474	35.8	2 26 3.37
14	45	325 43 19.9	43 2.1	151.40	+0.06	.9947343	36.6	2 22 7.46
15	46	326 43 52.6	43 34.6	151.33	−0.06	.9948233	37.5	2 18 11.55
16	47	327 44 23.7	44 5.5	151.26	0.19	.9949144	38.4	2 14 15.64
17	48	328 44 53.2	44 34.8	151.20	0.32	.9950077	39.3	2 10 19.73
18	49	329 45 21.2	45 2.8	151.14	0.45	.9951031	40.1	2 6 23.82
19	50	330 45 47.7	45 29.3	151.07	0.56	.9952005	40.9	2 2 27.92
20	51	331 46 12.7	45 54.1	151.01	0.65	.9952998	41.7	1 58 32.01
21	52	332 46 36.1	46 17.4	150.94	0.72	.9954009	42.4	1 54 36.09
22	53	333 46 58.0	46 39.2	150.88	0.77	.9955036	43.1	1 50 40.18
23	54	334 47 18.6	46 59.7	150.83	0.79	.9956079	43.7	1 46 44.27
24	55	335 47 37.8	47 18.8	150.77	0.77	.9957138	44.4	1 42 48.37
25	56	336 47 55.5	47 36.3	150.71	0.73	.9958210	44.8	1 38 52.46
26	57	337 48 11.8	47 52.5	150.65	0.66	.9959293	45.2	1 34 56.55
27	58	338 48 26.6	48 7.2	150.58	0.56	.9960386	45.6	1 31 0.63
28	59	339 48 39.8	48 20.3	150.52	0.44	.9961485	45.9	1 27 4.73
29	60	340 48 51.4	48 31.8	150.45	−0.31	9.9962591	+46.2	1 23 8.83

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.0.

Diff. for 1 hour.
—9s.8296
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 55.2	14 52.7	54 38.6	−0.79	54 29.6	−0.71	☌		28.9
2	14 50.6	14 48.8	54 21.7	0.62	54 14.8	0.53	0 22.2	1.82	0.2
3	14 47.1	14 45.9	54 9.0	0.43	54 4.5	0.32	1 4.6	1.71	1.2
4	14 45.0	14 44.6	54 1.3	−0.21	53 59.6	−0.08	1 45.0	1.65	2.2
5	14 44.5	14 44.9	53 59.5	+0.06	54 1.1	+0.21	2 24.1	1.62	3.2
6	14 45.9	14 47.4	54 4.6	0.37	54 10.1	0.54	3 3.0	1.63	4.2
7	14 49.5	14 52.1	54 17.7	0.72	54 27.5	0.91	3 42.8	1.70	5.2
8	14 55.4	14 59.3	54 39.5	1.10	54 53.9	1.29	4 24.8	1.81	6.2
9	15 3.9	15 9.1	55 10.6	1.49	55 29.6	1.68	5 9.9	1.96	7.2
10	15 14.9	15 21.3	55 50.9	1.86	56 14.3	2.03	5 58.9	2.14	8.2
11	15 28.1	15 35.5	56 39.6	2.19	57 6.6	2.31	6 52.5	2.33	9.2
12	15 43.2	15 51.1	57 34.9	2.40	58 4.1	2.45	7 50.3	2.48	10.2
13	15 59.2	16 7.2	58 33.6	2.46	59 2.9	2.40	8 50.8	2.55	11.2
14	16 14.8	16 22.0	59 31.1	2.29	59 57.5	2.11	9 51.9	2.52	12.2
15	16 28.5	16 34.2	60 21.5	1.87	60 42.2	1.58	10 51.4	2.42	13.2
16	16 38.8	16 42.2	60 59.2	1.23	61 11.7	0.85	11 48.3	2.30	14.2
17	16 44.3	16 45.1	61 19.4	+0.44	61 22.2	+0.02	12 42.3	2.20	15.2
18	16 44.5	16 42.5	61 19.9	−0.40	61 12.7	−0.80	13 34.3	2.14	16.2
19	16 39.3	16 34.9	61 0.9	1.16	60 44.9	1.48	14 25.6	2.14	17.2
20	16 29.6	16 23.5	60 25.5	1.75	60 3.1	1.96	15 17.2	2.17	18.2
21	16 16.9	16 9.7	59 38.6	2.12	59 12.5	2.22	16 10.1	2.24	19.2
22	16 2.4	15 55.0	58 45.6	2.26	58 18.5	2.25	17 4.8	2.31	20.2
23	15 47.7	15 40.7	57 51.7	2.21	57 25.6	2.13	18 0.7	2.35	21.2
24	15 33.8	15 27.4	57 0.6	2.03	56 36.9	1.91	18 57.1	2.33	22.2
25	15 21.3	15 15.8	56 14.7	1.78	55 54.2	1.64	19 52.3	2.25	23.2
26	15 10.6	15 6.0	55 35.4	1.49	55 18.4	1.35	20 44.9	2.13	24.2
27	15 1.9	14 58.2	55 3.1	1.20	54 49.6	1.06	21 34.3	1.98	25.2
28	14 54.9	14 52.1	54 37.7	0.92	54 27.5	0.79	22 20.3	1.85	26.2
29	14 49.8	14 47.8	54 18.8	0.66	54 11.6	0.54	23 3.4	1.74	27.2
30	14 46.3	14 45.0	54 5.9	0.42	54 1.4	0.31	23 44.1	1.66	28.2
31	14 44.2	14 43.7	53 58.3	−0.20	53 56.5	−0.10	☌		29.2
32	14 43.6	14 43.7	53 56.0	+0.01	53 56.7	+0.11	0 23.5	1.62	0.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 1.					**SUNDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 23 52.10	2.0577	S.21 8 13.1	9.643	0	21 56 58.12	1.8372	S.12 2 10.3	12.726
1	20 25 55.40	2.0523	20 58 31.8	9.732	1	21 58 48.25	1.8338	11 49 25.5	12.767
2	20 27 58.38	2.0469	20 48 45.3	9.818	2	22 0 38.18	1.8304	11 36 38.2	12.807
3	20 30 1.03	2.0415	20 38 53.7	9.903	3	22 2 27.90	1.8271	11 23 48.6	12.846
4	20 32 3.36	2.0362	20 28 56.9	9.989	4	22 4 17.43	1.8239	11 10 56.7	12.884
5	20 34 5.38	2.0310	20 18 55.0	10.073	5	22 6 6.77	1.8207	10 58 2.5	12.922
6	20 36 7.08	2.0257	20 8 48.1	10.157	6	22 7 55.91	1.8175	10 45 6.1	12.958
7	20 38 8.46	2.0204	19 58 36.2	10.239	7	22 9 44.87	1.8144	10 32 7.5	12.994
8	20 40 9.53	2.0152	19 48 19.4	10.319	8	22 11 33.64	1.8113	10 19 6.8	13.028
9	20 42 10.28	2.0099	19 37 57.9	10.398	9	22 13 22.23	1.8084	10 6 4.1	13.062
10	20 44 10.72	2.0047	19 27 31.6	10.477	10	22 15 10.65	1.8055	9 52 59.4	13.095
11	20 46 10.85	1.9996	19 17 0.6	10.556	11	22 16 58.89	1.8026	9 39 52.7	13.127
12	20 48 10.67	1.9944	19 6 24.9	10.633	12	22 18 46.96	1.7997	9 26 44.1	13.158
13	20 50 10.18	1.9893	18 55 44.7	10.708	13	22 20 34.86	1.7970	9 13 33.7	13.189
14	20 52 9.39	1.9843	18 45 0.0	10.783	14	22 22 22.60	1.7944	9 0 21.4	13.220
15	20 54 8.30	1.9793	18 34 10.8	10.857	15	22 24 10.19	1.7919	8 47 7.3	13.249
16	20 56 6.91	1.9743	18 23 17.2	10.929	16	22 25 57.63	1.7894	8 33 51.5	13.277
17	20 58 5.22	1.9693	18 12 19.3	11.000	17	22 27 44.92	1.7869	8 20 34.1	13.303
18	21 0 3.23	1.9644	18 1 17.2	11.071	18	22 29 32.06	1.7844	8 7 15.1	13.330
19	21 2 0.95	1.9595	17 50 10.8	11.141	19	22 31 19.05	1.7821	7 53 54.5	13.357
20	21 3 58.37	1.9546	17 39 0.3	11.208	20	22 33 5.91	1.7798	7 40 32.3	13.382
21	21 5 55.50	1.9498	17 27 45.8	11.275	21	22 34 52.63	1.7776	7 27 8.7	13.405
22	21 7 52.34	1.9450	17 16 27.3	11.342	22	22 36 39.22	1.7754	7 13 43.7	13.428
23	21 9 48.90	1.9403	S.17 5 4.8	11.408	23	22 38 25.68	1.7733	S. 7 0 17.3	13.452
	SATURDAY 2.					**MONDAY 4.**			
0	21 11 45.18	1.9357	S.16 53 38.4	11.472	0	22 40 12.02	1.7712	S. 6 46 49.5	13.474
1	21 13 41.18	1.9310	16 42 8.2	11.535	1	22 41 58.23	1.7692	6 33 20.4	13.495
2	21 15 36.90	1.9263	16 30 34.2	11.597	2	22 43 44.33	1.7674	6 19 50.1	13.515
3	21 17 32.34	1.9217	16 18 56.5	11.658	3	22 45 30.32	1.7656	6 6 18.6	13.535
4	21 19 27.51	1.9172	16 7 15.2	11.719	4	22 47 16.20	1.7638	5 52 45.9	13.553
5	21 21 22.41	1.9127	15 55 30.2	11.779	5	22 49 1.98	1.7622	5 39 12.2	13.571
6	21 23 17.04	1.9082	15 43 41.7	11.837	6	22 50 47.66	1.7605	5 25 37.4	13.588
7	21 25 11.40	1.9039	15 31 49.8	11.894	7	22 52 33.24	1.7588	5 12 1.6	13.605
8	21 27 5.51	1.8997	15 19 54.4	11.951	8	22 54 18.72	1.7572	4 58 24.8	13.621
9	21 28 59.36	1.8954	15 7 55.7	12.006	9	22 56 4.11	1.7558	4 44 47.1	13.636
10	21 30 52.96	1.8912	14 55 53.7	12.061	10	22 57 49.42	1.7545	4 31 8.5	13.650
11	21 32 46.30	1.8869	14 43 48.4	12.115	11	22 59 34.65	1.7532	4 17 29.1	13.664
12	21 34 39.39	1.8827	14 31 39.9	12.167	12	23 1 19.80	1.7519	4 3 48.8	13.677
13	21 36 32.23	1.8787	14 19 28.3	12.218	13	23 3 4.88	1.7508	3 50 7.8	13.689
14	21 38 24.83	1.8747	14 7 13.7	12.269	14	23 4 49.89	1.7497	3 36 26.1	13.700
15	21 40 17.19	1.8707	13 54 56.0	12.320	15	23 6 34.84	1.7486	3 22 43.8	13.711
16	21 42 9.31	1.8668	13 42 35.3	12.368	16	23 8 19.72	1.7476	3 9 0.8	13.721
17	21 44 1.20	1.8629	13 30 11.8	12.416	17	23 10 4.55	1.7467	2 55 17.3	13.730
18	21 45 52.86	1.8591	13 17 45.4	12.463	18	23 11 49.32	1.7458	2 41 33.2	13.739
19	21 47 44.29	1.8553	13 5 16.2	12.509	19	23 13 34.04	1.7450	2 27 48.6	13.747
20	21 49 35.49	1.8515	12 52 44.3	12.554	20	23 15 18.72	1.7443	2 14 3.6	13.753
21	21 51 26.47	1.8478	12 40 9.7	12.599	21	23 17 3.36	1.7437	2 0 18.2	13.760
22	21 53 17.23	1.8442	12 27 32.4	12.642	22	23 18 47.96	1.7431	1 46 32.4	13.766
23	21 55 7.78	1.8407	12 14 52.6	12.684	23	23 20 32.53	1.7426	1 32 46.3	13.770
24	21 56 58.12	1.8372	S.12 2 10.3	12.726	24	23 22 17.07	1.7421	S. 1 19 0.0	13.774

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 22 17.07	1.7421	S. 1 19 0.0	13.774
1	23 24 1.58	1.7418	1 5 13.4	13.778
2	23 25 46.08	1.7415	0 51 26.6	13.781
3	23 27 30.56	1.7412	0 37 39.7	13.783
4	23 29 15.02	1.7410	0 23 52.7	13.784
5	23 30 59.48	1.7409	S. 0 10 5.6	13.785
6	23 32 43.93	1.7408	N. 0 3 41.5	13.785
7	23 34 28.38	1.7408	0 17 28.6	13.784
8	23 36 12.83	1.7409	0 31 15.6	13.783
9	23 37 57.29	1.7412	0 45 2.6	13.781
10	23 39 41.77	1.7415	0 58 49.4	13.778
11	23 41 26.27	1.7418	1 12 36.0	13.775
12	23 43 10.79	1.7422	1 26 22.4	13.771
13	23 44 55.33	1.7425	1 40 8.5	13.766
14	23 46 39.89	1.7430	1 53 54.3	13.761
15	23 48 24.49	1.7437	2 7 39.8	13.755
16	23 50 9.13	1.7443	2 21 24.9	13.748
17	23 51 53.81	1.7450	2 35 9.5	13.740
18	23 53 38.53	1.7458	2 48 53.7	13.732
19	23 55 23.30	1.7467	3 2 37.3	13.723
20	23 57 8.13	1.7477	3 16 20.4	13.713
21	23 58 53.02	1.7487	3 30 2.9	13.703
22	0 0 37.97	1.7497	3 43 44.8	13.692
23	0 2 22.99	1.7508	N. 3 57 26.0	13.680

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 4 8.07	1.7520	N. 4 11 6.4	13.668
1	0 5 53.23	1.7533	4 24 46.1	13.655
2	0 7 38.47	1.7547	4 38 25.0	13.641
3	0 9 23.79	1.7561	4 52 3.0	13.626
4	0 11 9.20	1.7577	5 5 40.1	13.611
5	0 12 54.71	1.7592	5 19 16.3	13.595
6	0 14 40.31	1.7608	5 32 51.5	13.578
7	0 16 26.01	1.7625	5 46 25.7	13.561
8	0 18 11.81	1.7643	5 59 58.8	13.543
9	0 19 57.73	1.7662	6 13 30.9	13.525
10	0 21 43.76	1.7682	6 27 1.8	13.505
11	0 23 29.91	1.7701	6 40 31.5	13.485
12	0 25 16.17	1.7721	6 54 0.0	13.464
13	0 27 2.56	1.7743	7 7 27.2	13.442
14	0 28 49.09	1.7766	7 20 53.1	13.420
15	0 30 35.75	1.7788	7 34 17.6	13.397
16	0 32 22.55	1.7812	7 47 40.7	13.373
17	0 34 9.49	1.7836	8 1 2.3	13.348
18	0 35 56.58	1.7862	8 14 22.5	13.323
19	0 37 43.83	1.7887	8 27 41.1	13.297
20	0 39 31.23	1.7913	8 40 58.1	13.271
21	0 41 18.79	1.7940	8 54 13.6	13.244
22	0 43 6.51	1.7968	9 7 27.4	13.215
23	0 44 54.41	1.7997	9 20 39.4	13.186
24	0 46 42.48	1.8027	N. 9 33 49.7	13.157

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 46 42.48	1.8027	N. 9 33 49.7	13.157
1	0 48 30.73	1.8057	9 46 58.2	13.126
2	0 50 19.16	1.8087	10 0 4.8	13.094
3	0 52 7.77	1.8118	10 13 9.5	13.062
4	0 53 56.58	1.8151	10 26 12.3	13.029
5	0 55 45.58	1.8183	10 39 13.0	12.995
6	0 57 34.78	1.8217	10 52 11.7	12.962
7	0 59 24.19	1.8252	11 5 8.4	12.927
8	1 1 13.80	1.8286	11 18 2.9	12.890
9	1 3 3.62	1.8322	11 30 55.2	12.852
10	1 4 53.66	1.8359	11 43 45.2	12.815
11	1 6 43.93	1.8397	11 56 33.0	12.777
12	1 8 34.42	1.8434	12 9 18.5	12.738
13	1 10 25.14	1.8472	12 22 1.6	12.698
14	1 12 16.09	1.8512	12 34 42.2	12.657
15	1 14 7.28	1.8552	12 47 20.4	12.615
16	1 15 58.71	1.8593	12 59 56.0	12.572
17	1 17 50.39	1.8634	13 12 29.0	12.529
18	1 19 42.32	1.8676	13 24 59.5	12.486
19	1 21 34.50	1.8718	13 37 27.3	12.440
20	1 23 26.94	1.8762	13 49 52.3	12.393
21	1 25 19.65	1.8807	14 2 14.5	12.347
22	1 27 12.62	1.8851	14 14 33.9	12.299
23	1 29 5.86	1.8897	N.14 26 50.4	12.250

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 30 59.38	1.8943	N.14 39 3.9	12.200
1	1 32 53.18	1.8990	14 51 14.4	12.150
2	1 34 47.26	1.9037	15 3 21.9	12.099
3	1 36 41.63	1.9086	15 15 26.3	12.047
4	1 38 36.29	1.9135	15 27 27.5	11.993
5	1 40 31.25	1.9185	15 39 25.4	11.938
6	1 42 26.51	1.9235	15 51 20.1	11.883
7	1 44 22.07	1.9286	16 3 11.4	11.827
8	1 46 17.94	1.9338	16 14 59.3	11.770
9	1 48 14.12	1.9390	16 26 43.8	11.712
10	1 50 10.62	1.9443	16 38 24.7	11.653
11	1 52 7.44	1.9497	16 50 2.1	11.593
12	1 54 4.58	1.9551	17 1 35.9	11.532
13	1 56 2.05	1.9606	17 13 6.0	11.470
14	1 57 59.85	1.9661	17 24 32.3	11.407
15	1 59 57.98	1.9717	17 35 54.8	11.342
16	2 1 56.45	1.9774	17 47 13.4	11.277
17	2 3 55.27	1.9832	17 58 28.0	11.211
18	2 5 54.43	1.9889	18 9 38.7	11.144
19	2 7 53.94	1.9948	18 20 45.3	11.076
20	2 9 53.81	2.0007	18 31 47.8	11.007
21	2 11 54.03	2.0067	18 42 46.1	10.937
22	2 13 54.61	2.0127	18 53 40.2	10.865
23	2 15 55.55	2.0188	19 4 29.9	10.792
24	2 17 56.86	2.0249	N.19 15 15.2	10.718

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	2 17 56.86	2.0249	N.19 15 15.2	10.718
1	2 19 58.54	2.0311	19 25 56.0	10.643
2	2 22 0.59	2.0373	19 36 32.4	10.568
3	2 24 3.02	2.0437	19 47 4.2	10.491
4	2 26 5.83	2.0500	19 57 31.3	10.412
5	2 28 9.02	2.0564	20 7 53.6	10.332
6	2 30 12.60	2.0628	20 18 11.2	10.252
7	2 32 16.56	2.0693	20 28 23.9	10.170
8	2 34 20.92	2.0759	20 38 31.6	10.088
9	2 36 25.67	2.0824	20 48 34.4	10.004
10	2 38 30.81	2.0890	20 58 32.1	9.918
11	2 40 36.35	2.0957	21 8 24.6	9.832
12	2 42 42.30	2.1025	21 18 11.9	9.744
13	2 44 48.65	2.1092	21 27 53.9	9.656
14	2 46 55.41	2.1160	21 37 30.6	9.566
15	2 49 2.57	2.1228	21 47 1.8	9.474
16	2 51 10.14	2.1297	21 56 27.5	9.382
17	2 53 18.13	2.1367	22 5 47.6	9.288
18	2 55 26.54	2.1436	22 15 2.0	9.193
19	2 57 35.36	2.1505	22 24 10.7	9.097
20	2 59 44.60	2.1575	22 33 13.6	8.998
21	3 1 54.26	2.1645	22 42 10.5	8.899
22	3 4 4.34	2.1716	22 51 1.5	8.800
23	3 6 14.85	2.1787	N.22 59 46.5	8.698

SUNDAY 10.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	3 8 25.78	2.1857	N.23 8 25.3	8.595
1	3 10 37.14	2.1928	23 16 57.9	8.491
2	3 12 48.92	2.1999	23 25 24.2	8.386
3	3 15 1.13	2.2071	23 33 44.2	8.279
4	3 17 13.77	2.2142	23 41 57.7	8.171
5	3 19 26.84	2.2214	23 50 4.7	8.062
6	3 21 40.34	2.2286	23 58 5.1	7.951
7	3 23 54.27	2.2358	24 5 58.8	7.838
8	3 26 8.63	2.2430	24 13 45.7	7.725
9	3 28 23.43	2.2503	24 21 25.8	7.610
10	3 30 38.67	2.2575	24 28 58.9	7.494
11	3 32 54.33	2.2646	24 36 25.1	7.377
12	3 35 10.42	2.2718	24 43 44.2	7.258
13	3 37 26.94	2.2790	24 50 56.1	7.138
14	3 39 43.90	2.2862	24 58 0.8	7.017
15	3 42 1.29	2.2934	25 4 58.1	6.893
16	3 44 19.11	2.3006	25 11 48.0	6.769
17	3 46 37.36	2.3077	25 18 30.4	6.643
18	3 48 56.03	2.3148	25 25 5.2	6.517
19	3 51 15.13	2.3219	25 31 32.4	6.388
20	3 53 34.66	2.3290	25 37 51.8	6.258
21	3 55 54.61	2.3361	25 44 3.4	6.127
22	3 58 14.99	2.3431	25 50 7.1	5.995
23	4 0 35.78	2.3500	25 56 2.8	5.862
24	4 2 56.99	2.3570	N.26 1 50.5	5.726

MONDAY 11.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	4 2 56.99	2.3570	N.26 1 50.5	5.726
1	4 5 18.62	2.3639	26 7 30.0	5.589
2	4 7 40.66	2.3708	26 13 1.2	5.452
3	4 10 3.12	2.3777	26 18 24.2	5.313
4	4 12 25.99	2.3845	26 23 38.8	5.172
5	4 14 49.26	2.3912	26 28 44.9	5.030
6	4 17 12.93	2.3978	26 33 42.4	4.887
7	4 19 37.00	2.4045	26 38 31.3	4.743
8	4 22 1.47	2.4112	26 43 11.5	4.597
9	4 24 26.34	2.4178	26 47 42.9	4.449
10	4 26 51.60	2.4242	26 52 5.4	4.301
11	4 29 17.24	2.4305	26 56 19.0	4.151
12	4 31 43.26	2.4368	27 0 23.5	3.999
13	4 34 9.66	2.4431	27 4 18.9	3.847
14	4 36 36.44	2.4493	27 8 5.2	3.695
15	4 39 3.58	2.4553	27 11 42.3	3.540
16	4 41 31.08	2.4613	27 15 10.0	3.384
17	4 43 58.94	2.4673	27 18 28.3	3.227
18	4 46 27.16	2.4732	27 21 37.2	3.068
19	4 48 55 72	2.4789	27 24 36.5	2.908
20	4 51 24.63	2.4847	27 27 26.2	2.747
21	4 53 53.88	2.4903	27 30 6.2	2.585
22	4 56 23.46	2.4957	27 32 36.4	2.422
23	4 58 53.36	2.5011	N.27 34 56.8	2.258

TUESDAY 12.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	5 1 23.59	2.5064	N.27 37 7.4	2.093
1	5 3 54.13	2.5116	27 39 8.0	1.927
2	5 6 24.98	2.5166	27 40 58.6	1.759
3	5 8 56.12	2.5215	27 42 39.1	1.590
4	5 11 27.56	2.5264	27 44 9.4	1.421
5	5 13 59.29	2.5312	27 45 29.6	1.251
6	5 16 31.30	2.5358	27 46 39.5	1.079
7	5 19 3.58	2.5403	27 47 39.1	0.907
8	5 21 36.13	2.5447	27 48 28.3	0.733
9	5 24 8.94	2.5489	27 49 7.1	0.559
10	5 26 42.00	2.5530	27 49 35.4	0.383
11	5 29 15.30	2.5570	27 49 53.1	0.208
12	5 31 48.84	2.5609	27 50 0.3	+0.032
13	5 34 22.61	2.5647	27 49 56.9	−0.146
14	5 36 56.60	2.5683	27 49 42.8	0.325
15	5 39 30.80	2.5718	27 49 17.9	0.505
16	5 42 5.21	2.5751	27 48 42.2	0.684
17	5 44 39.81	2.5782	27 47 55.8	0.863
18	5 47 14.59	2.5812	27 46 58.6	1.044
19	5 49 49.55	2.5842	27 45 50.5	1.227
20	5 52 24.69	2.5870	27 44 31.4	1.409
21	5 54 59.99	2.5896	27 43 1.4	1.592
22	5 57 35.44	2.5921	27 41 20.4	1.775
23	6 0 11.04	2.5945	27 39 28.4	1.959
24	6 2 46.78	2.5967	N.27 37 25.3	2.143

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 2 46.78	2.5967	N.27 37 25.3	2.143
1	6 5 22.65	2.5987	27 35 11.2	2.327
2	6 7 58.63	2.6006	27 32 46.0	2.512
3	6 10 34.72	2.6023	27 30 9.7	2.698
4	6 13 10.91	2.6040	27 27 22.2	2.884
5	6 15 47.20	2.6055	27 24 23.6	3.069
6	6 18 23.57	2.6068	27 21 13.9	3.255
7	6 21 0.01	2.6079	27 17 53.0	3.442
8	6 23 36.52	2.6090	27 14 20.9	3.628
9	6 26 13.09	2.6098	27 10 37.6	3.815
10	6 28 49.70	2.6105	27 6 43.1	4.002
11	6 31 26.35	2.6112	27 2 37.4	4.188
12	6 34 3.04	2.6117	26 58 20.5	4.375
13	6 36 39.75	2.6119	26 53 52.4	4.562
14	6 39 16.47	2.6120	26 49 13.1	4.748
15	6 41 53.19	2.6120	26 44 22.6	4.935
16	6 44 29.91	2.6119	26 39 20.9	5.121
17	6 47 6.62	2.6116	26 34 8.1	5.307
18	6 49 43.30	2.6111	26 28 44.1	5.492
19	6 52 19.95	2.6106	26 23 9.0	5.678
20	6 54 56.57	2.6099	26 17 22.7	5.864
21	6 57 33.14	2.6090	26 11 25.3	6.049
22	7 00 9.65	2.6080	26 5 16.8	6.233
23	7 2 46.10	2.6069	N.25 58 57.3	6.417

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 5 22.48	2.6057	N.25 52 26.8	6.600
1	7 7 58.78	2.6043	25 45 45.3	6.783
2	7 10 34.99	2.6028	25 38 52.8	6.967
3	7 13 11.11	2.6012	25 31 49.3	7.149
4	7 15 47.13	2.5994	25 24 34.9	7.330
5	7 18 23.04	2.5974	25 17 9.7	7.511
6	7 20 58.82	2.5953	25 9 33.6	7.692
7	7 23 34.48	2.5933	25 1 46.7	7.871
8	7 26 10.02	2.5912	24 53 49.1	8.048
9	7 28 45.42	2.5888	24 45 40.9	8.226
10	7 31 20.67	2.5863	24 37 22.0	8.403
11	7 33 55.77	2.5838	24 28 52.5	8.579
12	7 36 30.72	2.5811	24 20 12.5	8.754
13	7 39 5.50	2.5782	24 11 22.0	8.928
14	7 41 40.11	2.5753	24 2 21.1	9.102
15	7 44 14.54	2.5723	23 53 9.8	9.273
16	7 46 48.79	2.5693	23 43 48.3	9.444
17	7 49 22.85	2.5662	23 34 16.5	9.615
18	7 51 56.73	2.5630	23 24 34.5	9.784
19	7 54 30.41	2.5596	23 14 42.4	9.951
20	7 57 3.88	2.5561	23 4 40.4	10.117
21	7 59 37.14	2.5526	22 54 28.4	10.283
22	8 2 10.19	2.5490	22 44 6.5	10.447
23	8 4 43.02	2.5453	22 33 34.8	10.608
24	8 7 15.63	2.5416	N.22 22 53.5	10.769

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 7 15.63	2.5416	N.22 22 53.5	10.769
1	8 9 48.01	2.5378	22 12 2.5	10.930
2	8 12 20.16	2.5339	22 1 1.9	11.089
3	8 14 52.08	2.5300	21 49 51.8	11.247
4	8 17 23.76	2.5260	21 38 32.3	11.402
5	8 19 55.20	2.5220	21 27 3.6	11.555
6	8 22 26.40	2.5179	21 15 25.7	11.707
7	8 24 57.35	2.5137	21 3 38.7	11.859
8	8 27 28.05	2.5095	20 51 42.6	12.009
9	8 29 58.49	2.5052	20 39 37.6	12.157
10	8 32 28.68	2.5010	20 27 23.7	12.304
11	8 34 58.61	2.4967	20 15 1.1	12.448
12	8 37 28.28	2.4923	20 2 29.9	12.592
13	8 39 57.69	2.4879	19 49 50.1	12.733
14	8 42 26.83	2.4835	19 37 1.9	12.873
15	8 44 55.71	2.4791	19 24 5.4	13.011
16	8 47 24.32	2.4746	19 11 0.6	13.148
17	8 49 52.66	2.4701	18 57 47.6	13.282
18	8 52 20.73	2.4656	18 44 26.7	13.414
19	8 54 48.53	2.4611	18 30 57.9	13.546
20	8 57 16.06	2.4566	18 17 21.2	13.676
21	8 59 43.32	2.4520	18 3 36.8	13.803
22	9 2 10.30	2.4474	17 49 44.8	13.928
23	9 4 37.01	2.4429	N.17 35 45.4	14.052

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 7 3.45	2.4383	N.17 21 38.6	14.173
1	9 9 29.61	2.4337	17 7 24.6	14.293
2	9 11 55.50	2.4292	16 53 3.4	14.412
3	9 14 21.12	2.4247	16 38 35.2	14.528
4	9 16 46.47	2.4202	16 24 0.1	14.642
5	9 19 11.54	2.4156	16 9 18.2	14.754
6	9 21 36.34	2.4111	15 54 29.6	14.864
7	9 24 0.87	2.4066	15 39 34.5	14.972
8	9 26 25.13	2.4022	15 24 33.0	15.078
9	9 28 49.13	2.3977	15 9 25.1	15.182
10	9 31 12.86	2.3933	14 54 11.1	15.284
11	9 33 36.33	2.3889	14 38 51.0	15.384
12	9 35 59.53	2.3845	14 23 25.0	15.482
13	9 38 22.47	2.3802	14 7 53.1	15.578
14	9 40 45.15	2.3758	13 52 15.6	15.672
15	9 43 7.57	2.3715	13 36 32.5	15.763
16	9 45 29.73	2.3673	13 20 44.0	15.853
17	9 47 51.64	2.3631	13 4 50.1	15.942
18	9 50 13.30	2.3589	12 48 51.0	16.028
19	9 52 34.71	2.3548	12 32 46.8	16.111
20	9 54 55.87	2.3507	12 16 37.7	16.192
21	9 57 16.79	2.3467	12 0 23.8	16.271
22	9 59 37.47	2.3427	11 44 5.2	16.348
23	10 1 57.91	2.3388	11 27 42.0	16.422
24	10 4 18.12	2.3349	N.11 11 14.5	16.494

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 4 18.12	2.3349	N.11 11 14.5	16.494
1	10 6 38.10	2.3310	10 54 42.7	16.566
2	10 8 57.84	2.3271	10 38 6.6	16.636
3	10 11 17.35	2.3233	10 21 26.4	16.703
4	10 13 36.64	2.3197	10 4 42.3	16.766
5	10 15 55.72	2.3162	9 47 54.5	16.828
6	10 18 14.58	2.3126	9 31 3.0	16.888
7	10 20 33.23	2.3091	9 14 7.9	16.947
8	10 22 51.67	2.3056	8 57 9.4	17.002
9	10 25 9.90	2.3022	8 40 7.7	17.055
10	10 27 27.93	2.2988	8 23 2.8	17.107
11	10 29 45.76	2.2956	8 5 54.9	17.156
12	10 32 3.40	2.2924	7 48 44.1	17.203
13	10 34 20.85	2.2893	7 31 30.5	17.248
14	10 36 38.12	2.2862	7 14 14.3	17.292
15	10 38 55.20	2.2832	6 56 55.5	17.332
16	10 41 12.10	2.2802	6 39 34.4	17.371
17	10 43 28.83	2.2774	6 22 11.0	17.407
18	10 45 45.39	2.2746	6 4 45.5	17.442
19	10 48 1.78	2.2719	5 47 18.0	17.474
20	10 50 18.02	2.2693	5 29 48.6	17.504
21	10 52 34.10	2.2667	5 12 17.5	17.532
22	10 54 50.02	2.2642	4 54 44.7	17.558
23	10 57 5.80	2.2618	N. 4 37 10.5	17.582

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 59 21.44	2.2595	N. 4 19 34.9	17.603
1	11 1 36.94	2.2572	4 1 58.1	17.623
2	11 3 52.30	2.2549	3 44 20.2	17.641
3	11 6 7.53	2.2527	3 26 41.2	17.657
4	11 8 22.63	2.2507	3 9 1.4	17.669
5	11 10 37.62	2.2488	2 51 20.9	17.681
6	11 12 52.49	2.2469	2 33 39.7	17.690
7	11 15 7.25	2.2451	2 15 58.1	17.697
8	11 17 21.90	2.2433	1 58 16.1	17.702
9	11 19 36.44	2.2415	1 40 33.8	17.706
10	11 21 50.88	2.2399	1 22 51.4	17.707
11	11 24 5.23	2.2385	1 5 9.0	17.706
12	11 26 19.50	2.2371	0 47 26.7	17.702
13	11 28 33.68	2.2357	0 29 44.7	17.697
14	11 30 47.78	2.2344	N. 0 12 3.1	17.690
15	11 33 1.81	2.2332	S. 0 5 38.1	17.681
16	11 35 15.77	2.2321	0 23 18.6	17.669
17	11 37 29.66	2.2310	0 40 58.4	17.657
18	11 39 43.49	2.2300	0 58 37.4	17.642
19	11 41 57.26	2.2292	1 16 15.4	17.624
20	11 44 10.99	2.2284	1 33 52.3	17.605
21	11 46 24.67	2.2277	1 51 28.0	17.584
22	11 48 38.31	2.2270	2 9 2.4	17.562
23	11 50 51.91	2.2263	2 26 35.4	17.537
24	11 53 5.47	2.2257	S. 2 44 6.8	17.509

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 53 5.47	2.2257	S. 2 44 6.8	17.509
1	11 55 19.00	2.2253	3 1 36.5	17.481
2	11 57 32.51	2.2251	3 19 4.5	17.451
3	11 59 46.01	2.2249	3 36 30.6	17.418
4	12 1 59.50	2.2247	3 53 54.7	17.384
5	12 4 12.97	2.2244	4 11 16.7	17.347
6	12 6 26.43	2.2243	4 28 36.4	17.309
7	12 8 39.89	2.2244	4 45 53.8	17.269
8	12 10 53.36	2.2246	5 3 8.7	17.227
9	12 13 6.84	2.2248	5 20 21.1	17.184
10	12 15 20.33	2.2250	5 37 30.8	17.138
11	12 17 33.84	2.2252	5 54 37.7	17.092
12	12 19 47.36	2.2256	6 11 41.8	17.042
13	12 22 0.91	2.2262	6 28 42.8	16.991
14	12 24 14.50	2.2267	6 45 40.7	16.939
15	12 26 28.12	2.2273	7 2 35.5	16.886
16	12 28 41.78	2.2280	7 19 27.0	16.829
17	12 30 55.48	2.2287	7 36 15.0	16.771
18	12 33 9.22	2.2295	7 52 59.5	16.712
19	12 35 23.02	2.2304	8 9 40.4	16.651
20	12 37 36.87	2.2313	8 26 17.6	16.588
21	12 39 50.78	2.2323	8 42 50.9	16.523
22	12 42 4.75	2.2334	8 59 20.3	16.457
23	12 44 18.79	2.2346	S. 9 15 45.7	16.388

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 46 32.90	2.2358	S. 9 32 6.9	16.318
1	12 48 47.08	2.2370	9 48 23.9	16.247
2	12 51 1.34	2.2384	10 4 36.6	16.175
3	12 53 15.69	2.2398	10 20 44.9	16.100
4	12 55 30.12	2.2412	10 36 48.6	16.023
5	12 57 44.64	2.2427	10 52 47.7	15.946
6	12 59 59.25	2.2442	11 8 42.1	15.867
7	13 2 13.95	2.2459	11 24 31.7	15.786
8	13 4 28.76	2.2476	11 40 16.4	15.703
9	13 6 43.67	2.2493	11 55 56.1	15.619
10	13 8 58.68	2.2512	12 11 30.7	15.533
11	13 11 13.81	2.2531	12 27 0.1	15.447
12	13 13 29.05	2.2549	12 42 24.3	15.358
13	13 15 44.40	2.2569	12 57 43.1	15.268
14	13 17 59.87	2.2588	13 12 56.5	15.177
15	13 20 15.46	2.2608	13 28 4.3	15.083
16	13 22 31.17	2.2629	13 43 6.5	14.989
17	13 24 47.01	2.2651	13 58 3.0	14.892
18	13 27 2.98	2.2672	14 12 53.6	14.794
19	13 29 19.08	2.2694	14 27 38.3	14.696
20	13 31 35.31	2.2717	14 42 17.1	14.597
21	13 33 51.68	2.2740	14 56 49.9	14.495
22	13 36 8.19	2.2763	15 11 16.5	14.392
23	13 38 24.84	2.2787	15 25 36.9	14.288
24	13 40 41.63	2.2811	S.15 39 51.0	14.182

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 40 41.63	2.2811	S.15 39 51.0	14.182
1	13 42 58.57	2.2836	15 53 58.7	14.074
2	13 45 15.66	2.2860	16 7 59.9	13.966
3	13 47 32.89	2.2884	16 21 54.6	13.857
4	13 49 50.27	2.2910	16 35 42.7	13.746
5	13 52 7.81	2.2936	16 49 24.1	13.633
6	13 54 25.50	2.2962	17 2 58.7	13.520
7	13 56 43.35	2.2988	17 16 26.5	13.405
8	13 59 1.35	2.3014	17 29 47.3	13.288
9	14 1 19.51	2.3040	17 43 1.1	13.171
10	14 3 37.83	2.3067	17 56 7.9	13.053
11	14 5 56.31	2.3093	18 9 7.5	12.933
12	14 8 14.94	2.3119	18 21 59.9	12.813
13	14 10 33.74	2.3147	18 34 45.1	12.692
14	14 12 52.70	2.3174	18 47 22.9	12.568
15	14 15 11.83	2.3202	18 59 53.2	12.443
16	14 17 31.12	2.3228	19 12 16.0	12.318
17	14 19 50.57	2.3256	19 24 31.3	12.192
18	14 22 10.19	2.3283	19 36 39.0	12.064
19	14 24 29.97	2.3311	19 48 39.0	11.935
20	14 26 49.92	2.3338	20 0 31.2	11.805
21	14 29 10.03	2.3366	20 12 15.6	11.674
22	14 31 30.31	2.3393	20 23 52.1	11.542
23	14 33 50.75	2.3420	S.20 35 20.7	11.409

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 36 11.35	2.3447	S.20 46 41.2	11.275
1	14 38 32.11	2.3474	20 57 53.7	11.141
2	14 40 53.04	2.3502	21 8 58.1	11.005
3	14 43 14.13	2.3528	21 19 54.3	10.868
4	14 45 35.38	2.3555	21 30 42.3	10.730
5	14 47 56.79	2.3581	21 41 21.9	10.591
6	14 50 18.35	2.3607	21 51 53.2	10.452
7	14 52 40.07	2.3633	22 2 16.1	10.312
8	14 55 1.95	2.3659	22 12 30.6	10.171
9	14 57 23.98	2.3685	22 22 36.6	10.028
10	14 59 46.17	2.3711	22 32 34.0	9.885
11	15 2 8.51	2.3735	22 42 22.8	9.741
12	15 4 30.99	2.3759	22 52 2.9	9.596
13	15 6 53.62	2.3783	23 1 34.3	9.451
14	15 9 16.39	2.3808	23 10 57.0	9.305
15	15 11 39.31	2.3832	23 20 10.9	9.157
16	15 14 2.37	2.3854	23 29 15.9	9.009
17	15 16 25.56	2.3877	23 38 12.0	8.862
18	15 18 48.89	2.3899	23 46 59.3	8.713
19	15 21 12.35	2.3921	23 55 37.6	8.563
20	15 23 35.94	2.3942	24 4 6.9	8.412
21	15 25 59.66	2.3963	24 12 27.1	8.261
22	15 28 23.50	2.3983	24 20 38.2	8.109
23	15 30 47.46	2.4002	24 28 40.2	7.957
24	15 33 11.53	2.4021	S.24 36 33.1	7.805

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 33 11.53	2.4021	S.24 36 33.1	7.805
1	15 35 35.71	2.4040	24 44 16.8	7.651
2	15 38 0.01	2.4059	24 51 51.2	7.497
3	15 40 24.42	2.4077	24 59 16.4	7.342
4	15 42 48.93	2.4093	25 6 32.3	7.187
5	15 45 13.53	2.4108	25 13 38.9	7.032
6	15 47 38.23	2.4124	25 20 36.2	6.877
7	15 50 3.02	2.4139	25 27 24.1	6.720
8	15 52 27.90	2.4152	25 34 2.6	6.563
9	15 54 52.85	2.4165	25 40 31.7	6.406
10	15 57 17.88	2.4178	25 46 51.3	6.248
11	15 59 42.99	2.4190	25 53 1.5	6.091
12	16 2 8.16	2.4201	25 59 2.2	5.933
13	16 4 33.40	2.4211	26 4 53.4	5.774
14	16 6 58.69	2.4220	26 10 35.1	5.615
15	16 9 24.04	2.4229	26 16 7.2	5.456
16	16 11 49.44	2.4237	26 21 29.8	5.297
17	16 14 14.89	2.4244	26 26 42.8	5.137
18	16 16 40.37	2.4249	26 31 46.2	4.977
19	16 19 5.88	2.4255	26 36 40.0	4.817
20	16 21 31.43	2.4260	26 41 24.2	4.657
21	16 23 57.00	2.4263	26 45 58.9	4.497
22	16 26 22.58	2.4265	26 50 23.9	4.337
23	16 28 48.18	2.4267	S.26 54 39.3	4.177

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 31 13.78	2.4267	S.26 58 45.1	4.016
1	16 33 39.39	2.4267	27 2 41.2	3.855
2	16 36 4.99	2.4266	27 6 27.7	3.695
3	16 38 30.58	2.4264	27 10 4.6	3.534
4	16 40 56.16	2.4262	27 13 31.8	3.373
5	16 43 21.72	2.4258	27 16 49.4	3.212
6	16 45 47.25	2.4253	27 19 57.3	3.052
7	16 48 12.75	2.4247	27 22 55.6	2.892
8	16 50 38.21	2.4240	27 25 44.3	2.731
9	16 53 3.63	2.4232	27 28 23.3	2.570
10	16 55 29.00	2.4223	27 30 52.7	2.411
11	16 57 54.31	2.4214	27 33 12.6	2.252
12	17 0 19.57	2.4204	27 35 22.9	2.092
13	17 2 44.76	2.4192	27 37 23.6	1.932
14	17 5 9.87	2.4178	27 39 14.7	1.772
15	17 7 34.90	2.4165	27 40 56.3	1.613
16	17 9 59.85	2.4151	27 42 28.3	1.454
17	17 12 24.71	2.4135	27 43 50.8	1.296
18	17 14 49.47	2.4118	27 45 3.8	1.138
19	17 17 14.13	2.4101	27 46 7.3	0.980
20	17 19 38.68	2.4083	27 47 1.4	0.822
21	17 22 3.12	2.4063	27 47 46.0	0.665
22	17 24 27.44	2.4043	27 48 21.2	0.508
23	17 26 51.63	2.4022	27 48 47.0	0.352
24	17 29 15.70	2.4000	S.27 49 3.5	0.197

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 29 15.70	2.4000	S.27 49 3.5	0.197	0	19 20 20.06	2.2035	S.25 10 47.8	6.484
1	17 31 39.63	2.3976	27 49 10.6	−0.041	1	19 22 32.11	2.1982	25 4 15.2	6.602
2	17 34 3.41	2.3951	27 49 8.4	+0.114	2	19 24 43.84	2.1928	24 57 35.5	6.719
3	17 36 27.04	2.3926	27 48 56.9	0.269	3	19 26 55.25	2.1875	24 50 48.9	6.834
4	17 38 50.52	2.3901	27 48 36.1	0.423	4	19 29 6.34	2.1821	24 43 55.4	6.948
5	17 41 13.85	2.3874	27 48 6.1	0.577	5	19 31 17.10	2.1767	24 36 55.1	7.062
6	17 43 37.01	2.3846	27 47 26.9	0.730	6	19 33 27.54	2.1713	24 29 47.9	7.176
7	17 46 0.00	2.3817	27 46 38.5	0.882	7	19 35 37.66	2.1659	24 22 34.0	7.287
8	17 48 22.81	2.3787	27 45 41.0	1.034	8	19 37 47.45	2.1604	24 15 13.5	7.397
9	17 50 45.44	2.3757	27 44 34.4	1.185	9	19 39 56.91	2.1550	24 7 46.4	7.506
10	17 53 7.89	2.3726	27 43 18.8	1.336	10	19 42 6.05	2.1496	24 0 12.8	7.615
11	17 55 30.15	2.3693	27 41 54.1	1.487	11	19 44 14.86	2.1441	23 52 32.6	7.723
12	17 57 52.21	2.3660	27 40 20.4	1.637	12	19 46 23.34	2.1386	23 44 46.0	7.829
13	18 0 14.07	2.3626	27 38 37.7	1.785	13	19 48 31.49	2.1332	23 36 53.1	7.934
14	18 2 35.72	2.3591	27 36 46.2	1.932	14	19 50 39.32	2.1277	23 28 53.9	8.039
15	18 4 57.16	2.3556	27 34 45.8	2.080	15	19 52 46.82	2.1222	23 20 48.4	8.142
16	18 7 18.39	2.3520	27 32 36.6	2.227	16	19 54 53.99	2.1167	23 12 36.8	8.244
17	18 9 39.40	2.3483	27 30 18.6	2.373	17	19 57 0.83	2.1113	23 4 19.1	8.346
18	18 12 0.18	2.3445	27 27 51.8	2.519	18	19 59 7.35	2.1059	22 55 55.3	8.447
19	18 14 20.74	2.3407	27 25 16.3	2.663	19	20 1 13.54	2.1004	22 47 25.5	8.546
20	18 16 41.06	2.3367	27 22 32.2	2.807	20	20 3 19.40	2.0950	22 38 49.8	8.643
21	18 19 1.14	2.3327	27 19 39.5	2.950	21	20 5 24.94	2.0896	22 30 8.3	8.740
22	18 21 20.98	2.3286	27 16 38.2	3.092	22	20 7 30.15	2.0842	22 21 21.0	8.836
23	18 23 40.57	2.3244	S.27 13 28.4	3.233	23	20 9 35.04	2.0787	S.22 12 28.0	8.932
	TUESDAY 26.					THURSDAY 28.			
0	18 25 59.91	2.3202	S.27 10 10.2	3.374	0	20 11 39.60	2.0733	S.22 3 29.2	9.027
1	18 28 19.00	2.3160	27 6 43.5	3.514	1	20 13 43.84	2.0680	21 54 24.8	9.119
2	18 30 37.83	2.3116	27 3 8.5	3.653	2	20 15 47.76	2.0626	21 45 14.9	9.211
3	18 32 56.39	2.3072	26 59 25.2	3.791	3	20 17 51.35	2.0573	21 35 59.5	9.302
4	18 35 14.69	2.3027	26 55 33.6	3.929	4	20 19 54.63	2.0520	21 26 38.7	9.392
5	18 37 32.72	2.2982	26 51 33.7	4.066	5	20 21 57.59	2.0467	21 17 12.5	9.481
6	18 39 50.47	2.2936	26 47 25.7	4.201	6	20 24 0.23	2.0414	21 7 41.0	9.568
7	18 42 7.95	2.2890	26 43 9.6	4.336	7	20 26 2.56	2.0362	20 58 4.3	9.655
8	18 44 25.15	2.2843	26 38 45.4	4.470	8	20 28 4.57	2.0308	20 48 22.4	9.742
9	18 46 42.07	2.2796	26 34 13.2	4.603	9	20 30 6.26	2.0256	20 38 35.3	9.827
10	18 48 58.70	2.2748	26 29 33.0	4.735	10	20 32 7.64	2.0205	20 28 43.1	9.911
11	18 51 15.04	2.2699	26 24 45.0	4.865	11	20 34 8.72	2.0154	20 18 46.0	9.993
12	18 53 31.09	2.2650	26 19 49.2	4.995	12	20 36 9.49	2.0103	20 8 43.9	10.076
13	18 55 46.84	2.2601	26 14 45.6	5.125	13	20 38 9.95	2.0052	19 58 36.9	10.157
14	18 58 2.30	2.2552	26 9 34.2	5.254	14	20 40 10.11	2.0001	19 48 25.1	10.236
15	19 0 17.46	2.2502	26 4 15.1	5.382	15	20 42 9.96	1.9950	19 38 8.6	10.315
16	19 2 32.32	2.2451	25 58 48.4	5.508	16	20 44 9.51	1.9900	19 27 47.3	10.393
17	19 4 46.87	2.2400	25 53 14.2	5.633	17	20 46 8.76	1.9851	19 17 21.4	10.470
18	19 7 1.12	2.2349	25 47 32.5	5.757	18	20 48 7.72	1.9802	19 6 50.9	10.546
19	19 9 15.06	2.2297	25 41 43.4	5.881	19	20 50 6.38	1.9752	18 56 15.9	10.621
20	19 11 28.69	2.2245	25 35 46.8	6.004	20	20 52 4.75	1.9703	18 45 36.4	10.695
21	19 13 42.00	2.2193	25 29 42.9	6.126	21	20 54 2.82	1.9655	18 34 52.5	10.768
22	19 15 55.00	2.2141	25 23 31.7	6.247	22	20 56 0.61	1.9607	18 24 4.3	10.840
23	19 18 7.69	2.2088	25 17 13.3	6.366	23	20 57 58.11	1.9559	18 13 11.7	10.912
24	19 20 20.06	2.2035	S.25 10 47.8	6.484	24	20 59 55.32	1.9512	S.18 2 14.9	10.982

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	1	20	17.0
☽ First Quarter, ...	10	1	16.9
○ Full Moon, ...	16	23	16.8
☾ Last Quarter, ...	23	15	12.8

	d	h
☾ Apogee, ...	4	23.6
☾ Perigee, ...	17	17.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
4	Sun	W.	23° 28′ 23″	3455	24° 49′ 37″	3458	26° 10′ 48″	3460	27° 31′ 57″	3462
	Mars	E.	53 50 59	3319	52 27 9	3322	51 3 23	3325	49 39 41	3328
	α Arietis	E.	57 11 40	3089	55 43 17	3092	54 14 58	3096	52 46 43	3098
	Aldebaran	E.	89 12 51	3141	87 45 31	3143	86 18 13	3146	84 50 59	3148
5	Sun	W.	34 17 16	3467	35 38 17	3468	36 59 17	3468	38 20 17	3468
	Mars	E.	42 41 56	3340	41 18 31	3342	39 55 8	3344	38 31 47	3346
	α Arietis	E.	45 26 15	3110	43 58 18	3113	42 30 24	3114	41 2 32	3117
	Aldebaran	E.	77 35 25	3158	76 8 25	3158	74 41 26	3159	73 14 28	3161
6	Sun	W.	45 5 29	3462	46 26 36	3459	47 47 46	3456	49 8 59	3453
	Venus	W.	22 56 36	3070	24 25 22	3057	25 54 24	3046	27 23 40	3034
	Saturn	W.	14 47 58	3294	16 12 16	3263	17 37 11	3238	19 2 35	3217
	Mars	E.	31 35 34	3353	30 12 24	3356	28 49 17	3358	27 26 12	3360
	α Arietis	E.	33 43 51	3128	32 16 15	3130	30 48 42	3132	29 21 11	3135
	Aldebaran	E.	65 59 57	3164	64 33 5	3164	63 6 13	3164	61 39 21	3164
	Pollux	E.	108 20 17	3085	106 51 49	3082	105 23 18	3080	103 54 44	3078
7	Sun	W.	55 56 6	3431	57 17 47	3426	58 39 34	3420	60 1 28	3414
	Venus	W.	34 53 8	2987	36 23 37	2978	37 54 17	2969	39 25 9	2960
	α Pegasi	W.	26 51 28	4125	28 1 6	4019	29 12 27	3925	30 25 21	3844
	Saturn	W.	26 14 39	3149	27 41 49	3138	29 9 13	3128	30 36 49	3117
	Aldebaran	E.	54 24 57	3163	52 58 3	3162	51 31 8	3162	50 4 13	3162
	Pollux	E.	96 30 52	3057	95 1 50	3052	93 32 41	3047	92 3 26	3041
8	Sun	W.	66 52 56	3375	68 15 41	3366	69 38 36	3356	71 1 43	3346
	Venus	W.	47 2 29	2909	48 34 36	2899	50 6 56	2888	51 39 30	2876
	Saturn	W.	37 57 52	3068	39 26 41	3058	40 55 42	3047	42 24 56	3036
	α Pegasi	W.	36 48 11	3547	38 7 43	3503	39 28 4	3463	40 49 10	3424
	Aldebaran	E.	42 49 40	3164	41 22 48	3167	39 55 59	3169	38 29 13	3173
	Pollux	E.	84 35 13	3005	83 5 7	2997	81 34 51	2989	80 4 24	2980
9	Sun	W.	78 0 20	3289	79 24 44	3276	80 49 23	3263	82 14 18	3250
	Venus	W.	59 26 8	2815	61 0 16	2802	62 34 41	2788	64 9 24	2774
	Saturn	W.	49 54 36	2977	51 25 17	2965	52 56 13	2952	54 27 26	2939
	α Pegasi	W.	47 44 38	3265	49 9 30	3238	50 34 54	3211	52 0 50	3186
	Aldebaran	E.	31 17 13	3220	29 51 28	3238	28 26 4	3260	27 1 6	3289
	Pollux	E.	72 29 9	2928	70 57 26	2916	69 25 28	2905	67 53 15	2893
	Regulus	E.	109 23 51	2917	107 51 54	2906	106 19 43	2894	104 47 16	2881
10	Sun	W.	89 23 2	3175	90 49 41	3158	92 16 40	3142	93 43 59	3125
	Venus	W.	72 7 44	2700	73 44 24	2684	75 21 26	2668	76 58 49	2652
	Saturn	W.	62 7 50	2868	63 40 50	2852	65 14 11	2836	66 47 52	2821
	α Pegasi	W.	59 17 54	3066	60 46 45	3044	62 16 3	3022	63 45 49	3000
	α Arietis	W.	15 40 5	3018	17 9 55	2970	18 40 45	2928	20 12 28	2892
	Mars	W.	15 5 2	3200	16 31 11	3157	17 58 12	3120	19 25 57	3087
	Pollux	E.	60 8 7	2826	58 34 13	2811	57 0 0	2797	55 25 28	2782
	Regulus	E.	97 0 49	2813	95 26 38	2798	93 52 7	2782	92 17 16	2767
11	Sun	W.	101 5 50	3035	102 35 19	3016	104 5 12	2997	105 35 28	2977
	Saturn	W.	74 41 37	2735	76 17 30	2718	77 53 46	2700	79 30 26	2681
	α Pegasi	W.	71 21 27	2892	72 53 56	2871	74 26 52	2850	76 0 15	2829
	α Arietis	W.	28 1 18	2759	29 36 49	2728	31 12 52	2704	32 49 25	2682

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
4	Sun	W.	28° 53′ 4″	3463	30° 14′ 9″	3464	31° 35′ 13″	3466	32° 56′ 15″	3467
	Mars	E.	48 16 2	3331	46 52 26	3333	45 28 53	3336	44 5 23	3338
	α Arietis	E.	51 18 31	3101	49 50 22	3104	48 22 17	3106	46 54 15	3108
	Aldebaran	E.	83 23 47	3150	81 56 38	3152	80 29 31	3154	79 2 27	3156
5	Sun	W.	39 41 17	3467	41 2 18	3466	42 23 20	3464	43 44 24	3463
	Mars	E.	37 8 29	3348	35 45 13	3349	34 21 58	3351	32 58 45	3352
	α Arietis	E.	39 34 43	3119	38 6 56	3121	36 39 12	3123	35 11 30	3125
	Aldebaran	E.	71 47 32	3162	70 20 37	3163	68 53 43	3163	67 26 50	3163
6	Sun	W.	50 30 16	3450	51 51 36	3446	53 13 1	3441	54 34 31	3437
	Venus	W.	28 53 10	3025	30 22 52	3015	31 52 46	3006	33 22 51	2997
	Saturn	W.	20 28 24	3200	21 54 33	3185	23 21 0	3172	24 47 43	3161
	Mars	E.	26 3 10	3363	24 40 11	3367	23 17 17	3372	21 54 28	3378
	α Arietis	E.	27 53 44	3139	26 26 22	3145	24 59 7	3151	23 31 59	3158
	Aldebaran	E.	60 12 29	3164	58 45 37	3163	57 18 44	3163	55 51 51	3163
	Pollux	E.	102 26 7	3074	100 57 25	3070	99 28 39	3066	97 59 48	3062
7	Sun	W.	61 23 29	3407	62 45 38	3400	64 7 55	3392	65 30 21	3384
	Venus	W.	40 56 12	2950	42 27 27	2940	43 58 55	2931	45 30 35	2920
	α Pegasi	W.	31 39 38	3771	32 55 10	3707	34 11 50	3649	35 29 32	3596
	Saturn	W.	32 4 38	3107	33 32 39	3098	35 0 51	3088	36 29 15	3078
	Aldebaran	E.	48 37 18	3162	47 10 23	3162	45 43 28	3162	44 16 33	3163
	Pollux	E.	90 34 4	3034	89 4 34	3028	87 34 56	3021	86 5 9	3014
8	Sun	W.	72 25 1	3336	73 48 31	3325	75 12 14	3313	76 36 10	3301
	Venus	W.	53 12 19	2865	54 45 23	2853	56 18 42	2841	57 52 17	2828
	Saturn	W.	43 54 24	3025	45 24 6	3014	46 54 1	3002	48 24 11	2990
	α Pegasi	W.	42 10 59	3389	43 33 28	3355	44 56 36	3324	46 20 20	3294
	Aldebaran	E.	37 2 32	3179	35 35 58	3185	34 9 31	3194	32 43 15	3206
	Pollux	E.	78 33 46	2970	77 2 56	2960	75 31 53	2950	74 0 38	2939
9	Sun	W.	83 39 28	3236	85 4 55	3221	86 30 39	3206	87 56 41	3190
	Venus	W.	65 44 26	2760	67 19 46	2746	68 55 25	2731	70 31 24	2715
	Saturn	W.	55 58 55	2925	57 30 42	2911	59 2 47	2898	60 35 9	2883
	α Pegasi	W.	53 27 16	3161	54 54 12	3137	56 21 37	3113	57 49 31	3089
	Aldebaran	E.	25 36 42	3325	24 12 59	3371	22 50 9	3429	21 28 25	3502
	Pollux	E.	66 20 47	2880	64 48 2	2867	63 15 1	2854	61 41 43	2840
	Regulus	E.	103 14 33	2868	101 41 33	2855	100 8 16	2842	98 34 42	2827
10	Sun	W.	95 11 38	3108	96 39 38	3090	98 8 0	3072	99 36 44	3054
	Venus	W.	78 36 34	2635	80 14 42	2618	81 53 13	2601	83 32 7	2583
	Saturn	W.	68 21 53	2804	69 56 16	2787	71 31 1	2770	73 6 8	2753
	α Pegasi	W.	65 16 2	2978	66 46 42	2956	68 17 50	2935	69 49 25	2913
	α Arietis	W.	21 44 57	2860	23 18 7	2830	24 51 56	2803	26 26 20	2777
	Mars	W.	20 54 22	3058	22 23 23	3030	23 52 59	3004	25 23 7	2978
	Pollux	E.	53 50 36	2766	52 15 24	2751	50 39 52	2735	49 3 59	2719
	Regulus	E.	90 42 5	2751	89 6 33	2735	87 30 39	2718	85 54 23	2701
11	Sun	W.	107 6 9	2958	108 37 14	2938	110 8 45	2917	111 40 42	2898
	Saturn	W.	81 7 31	2663	82 45 0	2644	84 22 55	2626	86 1 15	2607
	α Pegasi	W.	77 34 5	2808	79 8 22	2788	80 43 5	2768	82 18 15	2748
	α Arietis	W.	34 26 29	2660	36 4 3	2638	37 42 7	2616	39 20 40	2594

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Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
11	Mars	W.	26 53 47	2954	28 24 57	2931	29 56 37	[illegible]	31 28 46	2885
	Pollux	E.	47 27 44	2703	45 51 8	2687	44 14 10	2670	42 36 50	2653
	Regulus	E.	84 17 45	2684	82 40 44	2666	81 3 19	2649	79 25 30	2631
12	Sun	W.	113 13 4	2877	114 45 52	2856	116 19 7	2835	117 52 49	2815
	Saturn	W.	87 40 1	2588	89 19 13	2569	90 58 51	2549	92 38 56	2530
	α Pegasi	W.	83 53 51	2728	85 29 54	2707	87 6 24	2688	88 43 20	2668
	α Arietis	W.	40 59 43	2573	42 39 15	2552	44 19 16	2531	45 59 46	2510
	Mars	W.	39 16 44	2775	40 51 45	2753	42 27 15	2731	44 3 14	2710
	Pollux	E.	34 24 33	2571	32 44 58	2556	31 5 2	2540	29 24 45	2525
	Regulus	E.	71 10 15	2538	69 29 55	2520	67 49 9	2500	66 7 56	2481
13	Sun	W.	125 48 3	2711	127 24 28	2691	129 1 20	2670	130 38 40	2650
	Saturn	W.	101 6 1	2434	102 48 47	2415	104 32 1	2396	106 15 42	2378
	α Pegasi	W.	96 54 27	2576	98 33 55	2559	100 13 47	2542	101 54 2	2525
	α Arietis	W.	54 29 34	2408	56 12 58	2387	57 56 51	2368	59 41 12	2348
	Mars	W.	52 10 16	2604	53 49 6	2583	55 28 24	2562	57 8 11	2542
	Aldebaran	W.	24 28 43	2829	26 2 33	2757	27 37 57	2695	29 14 44	2641
	Regulus	E.	57 35 5	2385	55 51 9	2366	54 6 45	2347	52 21 54	2328
	Spica	E.	111 36 55	2389	109 53 4	2370	108 8 46	2350	106 24 0	2332
14	α Arietis	W.	68 29 59	2254	70 17 6	2237	72 4 39	2219	73 52 38	2202
	Mars	W.	65 34 2	2445	67 16 33	2426	68 59 31	2408	70 42 54	2390
	Aldebaran	W.	37 35 1	2434	39 17 47	2402	41 1 19	2372	42 45 34	2345
	Regulus	E.	43 30 53	2237	41 43 21	2220	39 55 24	2204	38 7 2	2187
	Spica	E.	97 33 24	2241	95 45 57	2223	93 58 4	2206	92 9 46	2189
15	α Arietis	W.	82 58 42	2125	84 49 3	2111	86 39 46	2098	88 30 48	2085
	Mars	W.	79 25 58	2310	81 11 43	2295	82 57 50	2281	84 44 17	2268
	Aldebaran	W.	51 36 7	2228	53 23 53	2209	55 12 7	2190	57 0 49	2174
	Regulus	E.	28 59 11	2112	27 8 30	2098	25 17 28	2086	23 26 7	2073
	Spica	E.	83 2 10	2113	81 11 31	2099	79 20 31	2086	77 29 11	2074
16	α Arietis	W.	97 50 32	2032	99 43 16	2025	101 36 12	2017	103 29 20	2009
	Mars	W.	93 41 4	2213	95 29 12	2204	97 17 34	2196	99 6 8	2180
	Aldebaran	W.	66 10 11	2104	68 1 4	2093	69 52 13	2084	71 43 38	2075
	Pollux	W.	23 13 25	2079	25 4 57	2062	26 56 55	2048	28 49 15	2035
	Spica	E.	68 8 1	2021	66 15 0	2013	64 21 46	2005	62 28 20	1998
	Antares	E.	113 59 13	2017	112 6 5	2008	110 12 43	2000	108 19 9	1993
17	Aldebaran	W.	81 3 34	2045	82 55 58	2042	84 48 26	2041	86 40 57	2039
	Pollux	W.	38 14 58	1995	40 8 40	1991	42 2 28	1988	43 56 21	1986
	Spica	E.	52 58 53	1976	51 4 41	1975	49 10 27	1974	47 16 11	1973
	Antares	E.	98 48 58	1970	96 54 36	1967	95 0 10	1966	93 5 42	1965
18	Aldebaran	W.	96 3 26	2049	97 55 44	2053	99 47 55	2059	101 39 57	2066
	Pollux	W.	53 26 9	1989	55 20 1	1993	57 13 47	1997	59 7 26	2001
	Regulus	W.	16 24 23	1981	18 18 28	1984	20 12 28	1987	22 6 22	1992
	Spica	E.	37 45 12	1985	35 51 14	1990	33 57 24	1997	32 3 45	2004
	Antares	E.	83 33 31	1974	81 39 15	1978	79 45 6	1983	77 51 5	1988
19	Pollux	W.	68 33 22	2039	70 25 56	2048	72 18 16	2058	74 10 20	2068
	Regulus	W.	31 33 33	2029	33 26 22	2038	35 18 57	2049	37 11 15	2059

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	Mars	W.	33° 1′ 24″	2862	34° 34′ 31″	2840	36° 8′ 7″	2818	37° 42′ 11″	2796
	Pollux	E.	40 59 7	2637	39 21 2	2621	37 42 35	2604	36 3 45	2588
	Regulus	E.	77 47 17	2613	76 8 40	2594	74 29 37	2576	72 50 9	2557
12	Sun	W.	119 26 57	2795	121 1 32	2773	122 36 35	2753	124 12 5	2732
	Saturn	W.	94 19 27	2511	96 0 25	2492	97 41 50	2472	99 23 42	2453
	α Pegasi	W.	90 20 43	2649	91 58 31	2630	93 36 45	2612	95 15 24	2594
	α Arietis	W.	47 40 46	2489	49 22 14	2468	51 4 12	2448	52 46 39	2428
	Mars	W.	45 39 41	2688	47 16 37	2667	48 54 1	2646	50 31 54	2624
	Pollux	E.	27 44 7	2512	26 3 10	2499	24 21 55	2488	22 40 25	2479
	Regulus	E.	64 26 16	2462	62 44 9	2443	61 1 35	2424	59 18 34	2404
13	Sun	W.	132 16 27	2629	133 54 42	2610	135 33 23	2591	137 12 31	2571
	Saturn	W.	107 59 49	2359	109 44 23	2340	111 29 24	2322	113 14 51	2304
	α Pegasi	W.	103 34 40	2510	105 15 39	2494	106 57 0	2480	108 38 41	2467
	α Arietis	W.	61 26 2	2328	63 11 20	2309	64 57 6	2291	66 43 19	2272
	Mars	W.	58 48 26	2522	60 29 9	2502	62 10 19	2482	63 51 57	2463
	Aldebaran	W.	30 52 43	2591	32 31 50	2547	34 11 58	2506	35 53 3	2468
	Regulus	E.	50 36 35	2309	48 50 49	2291	47 4 37	2273	45 17 58	2256
	Spica	E.	104 38 47	2313	102 53 6	2295	101 6 59	2277	99 20 25	2258
14	α Arietis	W.	75 41 3	2186	77 29 52	2169	79 19 6	2154	81 8 43	2139
	Mars	W.	72 26 43	2373	74 10 56	2356	75 55 34	2340	77 40 35	2325
	Aldebaran	W.	44 30 28	2319	46 16 0	2294	48 2 9	2270	49 48 52	2249
	Regulus	E.	36 18 15	2171	34 29 4	2155	32 39 29	2140	30 49 31	2126
	Spica	E.	90 21 2	2173	88 31 54	2157	86 42 22	2142	84 52 27	2128
15	α Arietis	W.	90 22 10	2073	92 13 50	2062	94 5 48	2052	95 58 2	2041
	Mars	W.	86 31 4	2256	88 18 9	2244	90 5 31	2233	91 53 10	2223
	Aldebaran	W.	58 49 56	2158	60 39 27	2143	62 29 21	2129	64 19 36	2116
	Regulus	E.	21 34 27	2062	19 42 30	2052	17 50 17	2043	15 57 50	2035
	Spica	E.	75 37 32	2062	73 45 34	2051	71 53 19	2041	70 0 48	2030
16	α Arietis	W.	105 22 40	2003	107 16 9	1999	109 9 45	1994	111 3 28	1991
	Mars	W.	100 54 52	2182	102 43 46	2177	104 32 48	2172	106 21 58	2169
	Aldebaran	W.	73 35 16	2067	75 27 6	2060	77 19 7	2054	79 11 17	2050
	Pollux	W.	30 41 55	2025	32 34 51	2015	34 28 2	2007	36 21 25	2001
	Spica	E.	60 34 43	1993	58 40 57	1987	56 47 2	1982	54 53 0	1979
	Antares	E.	106 25 24	1987	104 31 29	1982	102 37 26	1977	100 43 15	1973
17	Aldebaran	W.	88 33 30	2039	90 26 3	2041	92 18 34	2042	94 11 2	2045
	Pollux	W.	45 50 18	1984	47 44 17	1984	49 38 16	1985	51 32 14	1987
	Spica	E.	45 21 54	1974	43 27 38	1975	41 33 25	1978	39 39 16	1981
	Antares	E.	91 11 13	1965	89 16 44	1967	87 22 17	1968	85 27 52	1970
18	Aldebaran	W.	103 31 48	2073	105 23 28	2082	107 14 55	2091	109 6 8	2102
	Pollux	W.	61 0 58	2007	62 54 21	2014	64 47 33	2021	66 40 34	2030
	Regulus	W.	24 0 9	1998	25 53 47	2005	27 47 14	2012	29 40 30	2020
	Spica	E.	30 10 17	2012	28 17 2	2021	26 24 1	2032	24 31 17	2044
	Antares	E.	75 57 12	1994	74 3 29	2001	72 9 57	2009	70 16 37	2018
19	Pollux	W.	76 2 8	2080	77 53 38	2092	79 44 50	2105	81 35 42	2117
	Regulus	W.	39 3 17	2071	40 55 1	2083	42 46 27	2096	44 37 33	2106

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19	Antares	E.	68° 23′ 31″	2026	66° 30′ 38″	2037	64° 38′ 1″	2047	62° 45′ 40″	2058
	Jupiter	E.	115 46 23	2092	113 55 11	2101	112 4 14	2112	110 13 33	2122
20	Pollux	W.	83 26 15	2131	85 16 27	2145	87 6 18	2159	88 55 47	2174
	Regulus	W.	46 28 20	2122	48 18 46	2136	50 8 51	2150	51 58 34	2165
	Antares	E.	53 28 25	2121	51 37 58	2135	49 47 52	2149	47 58 8	2164
	Jupiter	E.	101 4 34	2186	99 15 45	2200	97 27 17	2214	95 39 11	2220
	α Aquilæ	E.	105 39 41	2855	104 6 25	2858	102 33 12	2862	101 0 5	2868
	Sun	E.	137 10 35	2427	135 27 39	2442	133 45 4	2458	132 2 51	2474
21	Pollux	W.	97 57 28	2253	99 44 36	2270	101 31 20	2287	103 17 39	2304
	Regulus	W.	61 1 26	2243	62 48 49	2260	64 35 47	2277	66 22 21	2294
	Antares	E.	38 55 12	2243	37 7 49	2260	35 20 50	2277	33 34 16	2294
	Jupiter	E.	86 44 26	2309	84 58 40	2326	83 13 19	2343	81 28 22	2360
	α Aquilæ	E	93 17 5	2922	91 45 14	2938	90 13 43	2954	88 42 32	2972
	Sun	E.	123 37 32	2559	121 57 40	2576	120 18 12	2594	118 39 9	2612
22	Regulus	W.	75 8 55	2380	76 52 59	2397	78 36 38	2415	80 19 52	2431
	Spica	W.	21 13 51	2409	22 57 13	2422	24 40 16	2437	26 22 58	2451
	Antares	E.	24 47 43	2380	23 3 40	2398	21 20 2	2415	19 36 49	2433
	Jupiter	E.	72 49 52	2448	71 7 25	2465	69 25 23	2483	67 43 46	2500
	α Aquilæ	E.	81 12 47	3080	79 44 13	3105	78 16 9	3131	76 48 37	3158
	Sun	E.	110 30 7	2705	108 53 34	2724	107 17 26	2743	105 41 43	2761
23	Regulus	W.	88 49 57	2517	90 30 46	2534	92 11 12	2551	93 51 15	2567
	Spica	W.	34 51 10	2529	36 31 43	2545	38 11 54	2561	39 51 43	2576
	Jupiter	E.	59 21 47	2588	57 42 35	2605	56 3 47	2622	54 25 22	2638
	α Aquilæ	F.	69 39 41	3315	68 15 47	3351	66 52 35	3389	65 30 6	3428
	Sun	E.	97 49 12	2854	96 15 54	2872	94 42 59	2890	93 10 27	2907
24	Spica	W.	48 5 30	2653	49 43 13	2667	51 20 37	2682	52 57 41	2697
	Jupiter	E.	46 18 49	2719	44 42 35	2735	43 6 42	2750	41 31 9	2766
	α Aquilæ	E.	58 49 19	3654	57 31 43	3706	56 15 2	3762	54 59 20	3821
	Sun	E.	85 33 19	2993	84 2 58	3009	82 32 57	3026	81 3 16	3041
25	Spica	W.	60 58 21	2764	62 33 36	2776	64 8 35	2789	65 43 17	2801
	Antares	W.	15 4 27	2761	16 39 46	2774	18 14 48	2785	19 49 35	2798
	Jupiter	E.	33 38 17	2838	32 4 39	2852	30 31 18	2866	28 58 15	2879
	α Aquilæ	E.	48 57 11	4179	47 48 25	4265	46 41 0	4359	45 35 2	4462
	Sun	E.	73 39 34	3115	72 11 43	3129	70 44 9	3144	69 16 53	3158
26	Spica	W	73 33 0	2857	75 6 14	2868	76 39 14	2878	78 12 1	2887
	Antares	W.	27 39 41	2853	29 13 0	2864	30 46 5	2674	32 18 57	2883
	Jupiter	E.	21 17 17	2946	19 45 57	2961	18 14 55	2976	16 44 12	2992
	Sun	E.	62 4 23	3219	60 38 36	3231	59 13 3	3242	57 47 43	3253
27	Spica	W.	85 53 0	2932	87 24 38	2939	88 56 7	2947	90 27 26	2955
	Antares	W.	40 0 19	2928	41 32 2	2936	43 3 35	2943	44 34 59	2951
	Sun	E.	50 44 5	3301	49 19 55	3310	47 55 55	3319	46 32 5	3327
28	Spica	W.	98 1 45	2988	99 32 13	2994	101 2 33	3000	102 32 46	3005
	Antares	W.	52 9 43	2984	53 40 16	2990	55 10 41	2996	56 40 59	3001
	Sun	E.	39 35 14	3365	38 12 17	3372	36 49 28	3379	35 26 47	3385

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19	Antares	E.	60° 53′ 36″	2070	59° 1′ 50″	2081	57° 10′ 22″	2094	55° 19′ 13″	2107
	Jupiter	E.	108 23 8	2134	106 33 1	2147	104 43 13	2159	102 53 44	2172
20	Pollux	W.	90 44 54	2189	92 33 38	2205	94 21 58	2220	96 9 55	2237
	Regulus	W.	53 47 55	2180	55 36 53	2195	57 25 28	2211	59 13 39	2227
	Antares	E.	46 8 46	2179	44 19 47	2195	42 31 12	2210	40 43 0	2227
	Jupiter	E.	93 51 28	2245	92 4 7	2261	90 17 10	2277	88 30 36	2293
	α Aquilæ	E.	99 27 5	2876	97 54 15	2885	96 21 37	2896	94 49 13	2909
	Sun	E.	130 21 1	2490	128 39 34	2506	126 58 29	2523	125 17 48	2541
21	Pollux	W.	105 3 33	2321	106 49 2	2339	108 34 5	2356	110 18 43	2373
	Regulus	W.	68 8 30	2311	69 54 14	2328	71 39 33	2345	73 24 27	2363
	Antares	E.	31 48 7	2311	30 2 23	2328	28 17 5	2346	26 32 12	2362
	Jupiter	E.	79 43 50	2378	77 59 43	2395	76 16 1	2412	74 32 44	2430
	α Aquilæ	E.	87 11 44	2991	85 41 20	3012	84 11 22	3033	82 41 50	3056
	Sun	E.	117 0 30	2630	115 22 16	2649	113 44 28	2668	112 7 5	2687
22	Regulus	W.	82 2 42	2449	83 45 7	2466	85 27 8	2484	87 8 44	2500
	Spica	W.	28 5 20	2467	29 47 20	2482	31 28 59	2498	33 10 15	2513
	Antares	E.	17 54 1	2450	16 11 38	2468	14 29 40	2487	12 48 8	2504
	Jupiter	E.	66 2 33	2518	64 21 45	2536	62 41 22	2553	61 1 23	2570
	α Aquilæ	E.	75 21 38	3187	73 55 13	3218	72 29 25	3249	71 4 14	3282
	Sun	E.	104 6 24	2780	102 31 30	2798	100 57 0	2817	99 22 54	2835
23	Regulus	W.	95 30 55	2583	97 10 13	2599	98 49 9	2615	100 27 44	2631
	Spica	W.	41 31 11	2592	43 10 17	2607	44 49 2	2623	46 27 26	2638
	Jupiter	E.	52 47 19	2655	51 9 38	2672	49 32 20	2688	47 55 24	2704
	α Aquilæ	E.	64 8 21	3469	62 47 22	3512	61 27 11	3556	60 7 49	3604
	Sun	E.	91 38 17	2925	90 6 30	2942	88 35 5	2959	87 4 1	2977
24	Spica	W.	54 34 25	2710	56 10 51	2724	57 46 59	2738	59 22 49	2751
	Jupiter	E.	39 55 56	2781	38 21 3	2795	36 46 29	2810	35 12 14	2824
	α Aquilæ	E.	53 44 40	3883	52 31 3	3950	51 18 34	4021	50 7 15	4098
	Sun	E.	79 33 54	3057	78 4 52	3072	76 36 8	3087	75 7 42	3101
25	Spica	W.	67 17 44	2813	68 51 55	2825	70 25 51	2835	71 59 33	2847
	Antares	W.	21 24 6	2809	22 58 22	2821	24 32 23	2832	26 6 9	2843
	Jupiter	E.	27 25 29	2892	25 53 0	2906	24 20 49	2919	22 48 54	2933
	α Aquilæ	E.	44 30 36	4572	43 27 47	4691	42 26 40	4822	41 27 22	4965
	Sun	E.	67 49 53	3170	66 23 8	3183	64 56 38	3195	63 30 23	3208
26	Spica	W.	79 44 36	2897	81 16 59	2905	82 49 11	2915	84 21 11	2924
	Antares	W.	33 51 37	2893	35 24 5	2902	36 56 21	2911	38 28 26	2920
	Jupiter	E.	15 13 49	3009	13 43 48	3028	12 14 10	3052	10 45 2	3086
	Sun	E.	56 22 36	3263	54 57 41	3273	53 32 58	3282	52 8 26	3292
27	Spica	W.	91 58 35	2962	93 29 35	2969	95 0 27	2976	96 31 10	2982
	Antares	W.	46 6 13	2958	47 37 18	2965	49 8 15	2972	50 39 3	2978
	Sun	E.	45 8 25	3335	43 44 54	3343	42 21 32	3351	40 58 19	3358
28	Spica	W.	104 2 52	3010	105 32 52	3015	107 2 46	3020	108 32 34	3025
	Antares	W.	58 11 10	3006	59 41 15	3011	61 11 14	3016	62 41 7	3020
	Sun	E.	34 4 13	3391	32 41 46	3396	31 19 25	3402	29 57 11	3408

AT GREENWICH APPARENT NOON.									
Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	22 49 11.92	9.360	S. 7 30 56.5	+57.05	16 10.32	65.42	12 32.35	0.495
Sat.	2	22 52 56.32	9.340	7 8 4.0	57.31	16 10.07	65.34	12 20.22	0.515
Sun.	3	22 56 40.24	9.320	6 45 5.6	57.55	16 9.82	65.27	12 7.61	0.535
Mon.	4	23 0 23.68	9.301	6 22 1.5	57.78	16 9.57	65.20	11 54.54	0.554
Tues.	5	23 4 6.66	9.282	5 58 52.2	57.99	16 9.32	65.14	11 41.01	0.573
Wed.	6	23 7 49.20	9.263	5 35 38.0	58.18	16 9.07	65.08	11 27.03	0.591
Thur.	7	23 11 31.33	9.246	5 12 19.3	58.38	16 8.82	65.02	11 12.65	0.608
Frid.	8	23 15 13.05	9.230	4 48 56.6	58.52	16 8.57	64.96	10 57.86	0.624
Sat.	9	23 18 54.37	9.214	4 25 30.4	58.66	16 8.31	64.91	10 42.68	0.640
Sun.	10	23 22 35.34	9.199	4 2 1.0	58.78	16 8.06	64.86	10 27.13	0.655
Mon.	11	23 26 15.96	9.185	3 38 28.7	58.89	16 7.80	64.81	10 11.24	0.669
Tues.	12	23 29 56.25	9.172	3 14 54.0	58.99	16 7.54	64.77	9 55.01	0.682
Wed.	13	23 33 36.22	9.159	2 51 17.3	59.07	16 7.28	64.73	9 38.47	0.695
Thur.	14	23 37 15.89	9.148	2 27 38.8	59.13	16 7.02	64.69	9 21.64	0.706
Frid.	15	23 40 55.31	9.137	2 3 59.0	59.18	16 6.76	64.66	9 4.55	0.717
Sat.	16	23 44 34.49	9.128	1 40 18.2	59.22	16 6.49	64.63	8 47.22	0.726
Sun.	17	23 48 13.45	9.119	1 16 36.7	59.24	16 6.22	64.60	8 29.68	0.735
Mon.	18	23 51 52.21	9.112	0 52 54.8	59.25	16 5.95	64.57	8 11.94	0.742
Tues.	19	23 55 30.79	9.105	0 29 12.8	59.24	16 5.67	64.55	7 54.02	0.749
Wed.	20	23 59 9.24	9.099	S. 0 5 31.2	59.22	16 5.40	64.53	7 35.96	0.755
Thur.	21	0 2 47.56	9.094	N. 0 18 9.7	59.19	16 5.12	64.51	7 17.77	0.760
Frid.	22	0 6 25.77	9.091	0 41 49.7	59.14	16 4.84	64.49	6 59.48	0.763
Sat.	23	0 10 3.92	9.088	1 5 28.2	59.08	16 4.56	64.48	6 41.12	0.766
Sun.	24	0 13 42.00	9.086	1 29 5.1	59.00	16 4.28	64.47	6 22.70	0.768
Mon.	25	0 17 20.05	9.085	1 52 39.9	58.91	16 4.00	64.46	6 4.25	0.769
Tues.	26	0 20 58.09	9.085	2 16 12.4	58.80	16 3.72	64.46	5 45.79	0.769
Wed.	27	0 24 36.15	9.086	2 39 42.1	58.68	16 3.43	64.46	5 27.35	0.769
Thur.	28	0 28 14.24	9.088	3 3 8.7	58.54	16 3.15	64.46	5 8.93	0.767
Frid.	29	0 31 52.37	9.090	3 26 31.9	58.39	16 2.86	64.47	4 50.55	0.765
Sat.	30	0 35 30.56	9.093	3 49 51.3	58.22	16 2.58	64.48	4 32.24	0.762
Sun.	31	0 39 8.84	9.096	4 13 6.6	58.04	16 2.30	64.49	4 14.02	0.758
Mon.	32	0 42 47.23	9.101	N. 4 36 17.2	+57.84	16 2.02	64.50	3 55.90	0.753

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.18$ from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing and that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	22 49 9.97	9.361	S. 7 31 8.4	+57.06	12 32.45	0.495	22 36 37.52
Sat.	2	22 52 54.40	9.341	7 8 15.8	57.32	12 20.32	0.515	22 40 34.08
Sun.	3	22 56 38.35	9.321	6 45 17.2	57.56	12 7.72	0.535	22 44 30.63
Mon.	4	23 0 21.83	9.302	6 22 13.0	57.79	11 54.65	0.554	22 48 27.18
Tues.	5	23 4 4.85	9.283	5 59 3.5	58.00	11 41.12	0.573	22 52 23.73
Wed.	6	23 7 47.43	9.265	5 35 49.1	58.19	11 27.14	0.591	22 56 20.29
Thur.	7	23 11 29.60	9.248	5 12 30.2	58.37	11 12.76	0.608	23 0 16.84
Frid.	8	23 15 11.36	9.232	4 49 7.3	58.53	10 57.97	0.624	23 4 13.39
Sat.	9	23 18 52.73	9.216	4 25 40.8	58.67	10 42.79	0.640	23 8 9.94
Sun.	10	23 22 33.74	9.201	4 2 11.2	58.79	10 27.24	0.655	23 12 6.50
Mon.	11	23 26 14.40	9.187	3 38 38.7	58.90	10 11.35	0.669	23 16 3.05
Tues.	12	23 29 54.73	9.174	3 15 3.8	59.00	9 55.12	0.682	23 19 59.61
Wed.	13	23 33 34.74	9.161	2 51 26.8	59.08	9 38.58	0.695	23 23 56.16
Thur.	14	23 37 14.46	9.150	2 27 48.0	59.14	9 21.75	0.706	23 27 52.71
Frid.	15	23 40 53.92	9.139	2 4 7.9	59.19	9 4.66	0.717	23 31 49.26
Sat.	16	23 44 33.15	9.130	1 40 26.8	59.23	8 47.33	0.726	23 35 45.82
Sun.	17	23 48 12.16	9.121	1 16 45.0	59.25	8 29.79	0.735	23 39 42.37
Mon.	18	23 51 50.97	9.114	0 53 2.7	59.26	8 12.04	0.742	23 43 38.93
Tues.	19	23 55 29.60	9.107	0 29 20.6	59.25	7 54.12	0.749	23 47 35.48
Wed.	20	23 59 8.09	9.101	S. 0 5 38.8	59.23	7 36.06	0.755	23 51 32.03
Thur.	21	0 2 46.45	9.096	N. 0 18 2.5	59.20	7 17.87	0.760	23 55 28.58
Frid.	22	0 6 24.71	9.093	0 41 42.8	59.15	6 59.57	0.763	23 59 25.14
Sat.	23	0 10 2.90	9.090	1 5 21.6	59.09	6 41.21	0.766	0 3 21.69
Sun.	24	0 13 41.03	9.088	1 28 58.8	59.01	6 22.78	0.768	0 7 18.25
Mon.	25	0 17 19.13	9.087	1 52 33.9	58.92	6 4.33	0.769	0 11 14.80
Tues.	26	0 20 57.22	9.087	2 16 6.8	58.81	5 45.86	0.769	0 15 11.36
Wed.	27	0 24 35.33	9.088	2 39 36.8	58.69	5 27.42	0.769	0 19 7.91
Thur.	28	0 28 13.46	9.090	3 3 3.7	58.55	5 9.00	0.767	0 23 4.46
Frid.	29	0 31 51.63	9.092	3 26 27.3	58.40	4 50.62	0.765	0 27 1.01
Sat.	30	0 35 29.87	9.095	3 49 46.9	58.23	4 32.30	0.762	0 30 57.57
Sun.	31	0 39 8.20	9.098	4 13 2.5	58.05	4 14.08	0.758	0 34 54.12
Mon.	32	0 42 46.63	9.103	N. 4 36 13.4	+57.85	3 55.95	0.753	0 38 50.68

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing and that the north declinations are increasing.

Diff. for 1 hour.
+9^s.8565

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	60	340 48 51.4	48 31.8	150.45	−0.31	9.9962591	+46.2	1 23 8.83
2	61	341 49 1.4	48 41.6	150.38	0.18	.9963704	46.4	1 19 12.92
3	62	342 49 9.7	48 49.8	150.31	−0.04	.9964822	46.6	1 15 17.01
4	63	343 49 16.1	48 56.1	150.23	+0.09	.9965943	46.7	1 11 21.11
5	64	344 49 20.7	49 0.6	150.15	0.21	.9967067	46.9	1 7 25.20
6	65	345 49 23.3	49 3.1	150.06	0.30	.9968194	47.0	1 3 29.29
7	66	346 49 23.8	49 3.4	149.97	0.37	.9969326	47.2	0 59 33.38
8	67	347 49 22.1	49 1.6	149.88	0.41	.9970463	47.4	0 55 37.47
9	68	348 49 18.3	48 57.7	149.80	0.42	.9971604	47.6	0 51 41.57
10	69	349 49 12.3	48 51.6	149.71	0.40	.9972750	47.9	0 47 45.67
11	70	350 49 4.1	48 43.3	149.61	0.35	.9973903	48.2	0 43 49.76
12	71	351 48 53.6	48 32.7	149.52	0.27	.9975063	48.5	0 39 53.85
13	72	352 48 40.9	48 19.9	149.42	0.17	.9976231	48.8	0 35 57.93
14	73	353 48 26.0	48 4.9	149.33	+0.05	.9977407	49.2	0 32 2.02
15	74	354 48 8.9	47 47.7	149.24	−0.08	.9978594	49.7	0 28 6.11
16	75	355 47 49.6	47 28.3	149.15	0.21	.9979791	50.1	0 24 10.21
17	76	356 47 28.2	47 6.8	149.06	0.34	.9980998	50.5	0 20 14.30
18	77	357 47 4.7	46 43.2	148.98	0.45	.9982216	51.0	0 16 18.39
19	78	358 46 39.1	46 17.5	148.89	0.56	.9983445	51.4	0 12 22.48
20	79	359 46 11.5	45 49.8	148.81	0.65	.9984683	51.8	0 8 26.58
21	80	0 45 41.9	45 20.1	148.73	0.71	.9985930	52.2	0 4 30.67
22	81	1 45 10.5	44 48.6	148.65	0.73	.9987186	52.5	0 0 34.76 23 56 38.85
23	82	2 44 37.3	44 15.3	148.58	0.72	.9988450	52.8	23 52 42.94
24	83	3 44 2.3	43 40.2	148.50	0.68	.9989720	53.0	23 48 47.04
25	84	4 43 25.4	43 3.2	148.42	0.62	.9990995	53.2	23 44 51.13
26	85	5 42 46.7	42 24.4	148.35	0.53	.9992273	53.3	23 40 55.22
27	86	6 42 6.3	41 43.9	148.28	0.42	.9993552	53.3	23 36 59.32
28	87	7 41 24.2	41 1.7	148.21	0.29	.9994830	53.2	23 33 3.41
29	88	8 40 40.4	40 17.8	148.13	0.15	.9996106	53.1	23 29 7.50
30	89	9 39 54.7	39 32.0	148.06	−0.01	.9997378	52.9	23 25 11.59
31	90	10 39 7.1	38 44.2	147.98	+0.12	.9998646	52.7	23 21 15.68
32	91	11 38 17.5	37 54.5	147.89	+0.23	9.9999909	+52.5	23 17 19.78

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January $0^d.0$.

Diff. for 1 hour.
$-9^s.8296$
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 49.8	14 47.8	54 18.8	−0.66	54 11.6	−0.54	23 3.4	1.74	27.2
2	14 46.3	14 45.0	54 5.9	0.42	54 1.4	0.31	23 44.1	1.66	28.2
3	14 44.2	14 43.7	53 58.3	−0.20	53 56.5	−0.10	6		29.2
4	14 43.6	14 43.7	53 56.0	+0.01	53 56.7	+0.11	0 23.5	1.62	0.4
5	14 44.3	14 45.2	53 58.7	0.23	54 2.1	0.35	1 2.5	1.63	1.4
6	14 46.6	14 48.3	54 7.0	0.47	54 13.4	0.60	1 42.1	1.67	2.4
7	14 50.5	14 53.1	54 21.3	0.73	54 31.0	0.87	2 23.2	1.76	3.4
8	14 56.2	14 59.8	54 42.3	1.02	54 55.5	1.17	3 6.8	1.90	4.4
9	15 3.9	15 8.5	55 10.5	1.33	55 27.4	1.49	3 53.8	2.04	5.4
10	15 13.6	15 19.2	55 46.2	1.65	56 6.9	1.80	4 44.6	2.21	6.4
11	15 25.3	15 31.9	56 29.3	1.94	56 53.5	2.08	5 39.3	2.35	7.4
12	15 38.8	15 46.2	57 19.1	2.19	57 45.9	2.28	6 36.8	2.44	8.4
13	15 53.7	16 1.3	58 13.5	2.33	58 41.6	2.33	7 35.5	2.45	9.4
14	16 9.0	16 16.3	59 9.4	2.30	59 36.4	2.20	8 33.8	2.39	10.4
15	16 23.2	16 29.6	60 2.0	2.05	60 25.3	1.83	9 30.3	2.31	11.4
16	16 35.1	16 39.7	60 45.7	1.56	61 2.4	1.23	10 24.7	2.23	12.4
17	16 43.1	16 45.2	61 14.9	0.85	61 22.7	+0.45	11 17.5	2.17	13.4
18	16 45.9	16 45.4	61 25.6	+0.03	61 23.3	−0.40	12 9.6	2.17	14.4
19	16 43.4	16 40.1	61 16.0	−0.82	61 3.9	1.20	13 2.1	2.21	15.4
20	16 35.6	16 30.0	60 47.3	1.55	60 27.0	1.84	13 56.0	2.29	16.4
21	16 23.6	16 16.5	60 3.4	2.08	59 37.3	2.26	14 52.0	2.38	17.4
22	16 9.0	16 1.1	59 9.4	2.37	58 40.6	2.43	15 49.7	2.43	18.4
23	15 53.1	15 45.2	58 11.4	2.43	57 42.4	2.39	16 48.0	2.42	19.4
24	15 37.6	15 30.2	57 14.2	2.31	56 47.2	2.19	17 45.3	2.34	20.4
25	15 23.3	15 16.8	56 21.8	2.05	55 58.1	1.89	18 40.0	2.20	21.4
26	15 10.9	15 5.6	55 36.5	1.72	55 16.9	1.53	19 31.0	2.04	22.4
27	15 0.9	14 56.8	54 59.7	1.35	54 44.6	1.16	20 18.2	1.89	23.4
28	14 53.3	14 50.4	54 31.8	0.98	54 21.1	0.80	21 2.1	1.76	24.4
29	14 48.1	14 46.3	54 12.6	0.63	54 6.1	0.46	21 43.4	1.68	25.4
30	14 45.1	14 44.3	54 1.5	0.31	53 58.7	−0.16	22 23.1	1.63	26.4
31	14 44.0	14 44.2	53 57.7	−0.02	53 58.2	+0.10	23 2.2	1.63	27.4
32	14 44.7	14 45.6	54 0.1	+0.22	54 3.4	+0.33	23 41.6	1.66	28.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 1.					SUNDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 59 55.32	1.9512	S. 18 2 14.9	10.982	0	22 29 3.08	1.7829	S. 8 11 46.2	13.287
1	21 1 52.25	1.9466	17 51 13.9	11.051	1	22 30 49.99	1.7808	7 58 28.1	13.315
2	21 3 18.91	1.9420	17 40 8.8	11.118	2	22 32 36.77	1.7787	7 45 8.4	13.341
3	.21 5 45.29	1.9373	17 28 59.7	11.186	3	22 34 23.43	1.7767	7 31 47.2	13.367
4	21 7 41.39	1.9327	17 17 46.5	11.253	4	22 36 9.97	1.7747	7 18 24.4	13.392
5	21 9 37.22	1.9283	17 6 29.4	11.318	5	22 37 56.39	1.7728	7 5 0.1	13.417
6	21 11 32.79	1.9239	16 55 8.4	11.382	6	22 39 42.70	1.7709	6 51 34.4	13.440
7	21 13 28.09	1.9195	16 43 43.6	11.445	7	22 41 28.90	1.7692	6 38 7.3	13.462
8	21 15 23.13	1.9151	16 32 15.0	11.508	8	22 43 15.00	1.7675	6 24 38.9	13.484
9	21 17 17.90	1.9107	16 20 42.6	11.570	9	22 45 1.00	1.7658	6 11 9.2	13.506
10	21 19 12.41	1.9064	16 9 6.6	11.630	10	22 46 46.90	1.7642	5 57 38.2	13.526
11	21 21 6.67	1.9022	15 57 27.0	11.690	11	22 48 32.71	1.7627	5 44 6.1	13.545
12	21 23 0.68	1.8981	15 45 43.8	11.749	12	22 50 18.42	1.7612	5 30 32.8	13.564
13	21 24 54.44	1.8939	15 33 57.1	11.807	13	22 52 4.05	1.7598	5 16 58.4	13.582
14	21 26 47.95	1.8898	15 22 7.0	11.864	14	22 53 49.60	1.7585	5 3 22.9	13.600
15	21 28 41.21	1.8857	15 10 13.4	11.921	·15	22 55 35.07	1.7572	4 49 46.4	13.617
16	21 30 34.23	1.8818	14 58 16.5	11.975	16	22 57 20.47	1.7560	4 36 8.9	13.632
17	21 32 27.02	1.8779	14 46 16.4	12.029	17	22 59 5.79	1.7548	4 22 30.5	13.647
18	21 34 19.58	1.8740	14 34 13.0	12.083	18	23 0 51.04	1.7537	4 8 51.3	13.661
19	21 36 11.90	1.8701	14 22 6.5	12.135	19	23 2 36.23	1.7527	3 55 11.2	13.675
20	21 38 3.99	1.8663	14 9 56.8	12.187	20	23 4 21.36	1.7517	3 41 30.3	13.687
21	21 39 55.86	1.8627	13 57 44.0	12.238	21	23 6 6.44	1.7508	3 27 48.7	13.699
22	21 41 47.51	1.8590	13 45 28.2	12.288	22	23 7 51.46	1.7499	3 14 6.4	13.711
23	21 43 38.94	1.8553	S. 13 33 9.4	12.338	23	23 9 36.43	1.7492	S. 3 0 23.4	13.722
	SATURDAY 2.					MONDAY 4.			
0	·21 45 30.15	1.8517	S. 13 20 47.7	12.386	0	23 11 21.36	1.7485	S. 2 46 39.7	13.732
1	21 47 21.15	1.8482	13 8 23.1	12.432	1	23 13 6.25	1.7478	2 32 55.5	13.741
2	21 49 11.94	1.8447	12 55 55.8	12.478	2	23 14 51.10	1.7472	2 19 10.8	13.749
3	21 51 2.52	1.8413	12 43 25.7	12.524	3	23 16 35.91	1.7466	2 5 25.6	13.757
4	21 52 52.90	1.8380	12 30 52.9	12.569	4	23 18 20.69	1.7462	1 51 40.0	13.763
5	21 54 43.08	1.8347	12 18 17.4	12.613	5	23 20 5.45	1.7458	1 37 54.0	13.769
6	21 56 33.06	1.8314	12 5 39.3	12.656	6	23 21 50.19	1.7455	1 24 7.7	13 774
7	21 58 22.85	1.8282	11 52 58.7	12.698	7	23 23 34.91	1.7452	1 10 21.1	13.779
8	22 0 12.45	1.8251	11 40 15.6	12.739	8	23 25 19.62	1.7450	0 56 34.2	13.783
9	22 2 1.86	1.8220	11 27 30.0	12.780	9	23 27 4.31	1.7448	0 42 47.1	13.786
10	22 3 51.09	1.8190	11 14 42.0	12.819	10	23 28 49.00	1.7447	0 28 59.9	13.788
11	22 5 40.14	1 8161	11 1 51.7	12.858	11	23 30 33.68	1.7447	0 15 12.6	13.790
12	22 7 29.02	1.8132	10 48 59.1	12.896	12	23 32 18.36	1.7448	S. 0 1 25.1	13.792
13	22 9 17.72	1.8103	10 36 4.2	12.932	13	23 34 3.05	1.7449	N. 0 12 22.4	13.791
14	22 11 6.26	1.8076	10 23 7.2	12.968	14	23 35 47.75	1.7450	0 26 9.8	13.790
15	22 12 54.63	1.8048	10 10 8.0	13.004	15	23 37 32.45	1.7452	0 39 57.2	13.789
16	22 14 42.84	1.8022	9 57 6.7	13.039	16	23 39 17.17	1.7455	0 53 44.5	13.787
17	22 16 30.89	1.7995	9 44 3.3	13.073	17	23 41 1.91	1.7459	1 7 31.6	13.783
18	22 18 18.78	1.7969	9 30 57.9	13.107	18	23 42 46.68	1.7463	1 21 18.5	13.780
19	22 20 6.52	1.7944	9 17 50.5	13.138	19	23 44 31.47	1.7468	1 35 5.2	13.776
20	22 21 54.11	1.7920	9 4 41.3	13.169	20	23 46 16.30	1.7474	1 48 51.6	13.771
21	22 23 41.56	1.7897	8 51 30.2	13.200	21	23 48 1.16	1.7480	2 2 37.7	13.766
22	22 25 28.87	1.7873	8 38 17.3	13.230	22	23 49 46.06	1.7487	2 16 23.5	13.759
23	22 27 16.04	1.7851	8 25 2.6	13.259	23	23 51 31.00	1.7493	2 30 8.8	13.751
24	22 29 3.08	1.7829	S. 8 11 46.2	13.287	24	23 53 15.98	1.7501	N. 2 43 53.6	13.742

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 53 15.98	1.7501	N. 2 43 53.6	13.742
1	23 55 1.01	1.7510	2 57 37.9	13.734
2	23 56 46.10	1.7520	3 11 21.7	13.725
3	23 58 31.25	1.7530	3 25 4.9	13.715
4	0 0 16.46	1.7541	3 38 47.5	13.704
5	0 2 1.74	1.7552	3 52 29.4	13.692
6	0 3 47.08	1.7563	4 6 10.5	13.679
7	0 5 32.49	1.7576	4 19 50.9	13.666
8	0 7 17.99	1.7590	4 33 30.4	13.652
9	0 9 3.57	1.7603	4 47 9.1	13.637
10	0 10 49.23	1.7617	5 0 46.9	13.622
11	0 12 34.98	1.7633	5 14 23.7	13.605
12	0 14 20.83	1.7649	5 27 59.5	13.587
13	0 16 6.77	1.7665	5 41 34.2	13.570
14	0 17 52.81	1.7682	5 55 7.9	13.552
15	0 19 38.95	1.7699	6 8 40.5	13.533
16	0 21 25.20	1.7718	6 22 11.9	13.513
17	0 23 11.57	1.7737	6 35 42.0	13.493
18	0 24 58.05	1.7757	6 49 10.9	13.471
19	0 26 44.65	1.7777	7 2 38.5	13.448
20	0 28 31.37	1.7797	7 16 4.7	13.424
21	0 30 18.22	1.7819	7 29 29.4	13.400
22	0 32 5.20	1.7842	7 42 52.7	13.376
23	0 33 52.32	1.7864	N. 7 56 14.5	13.350

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 35 39.57	1.7887	N. 8 9 34.7	13.323
1	0 37 26.96	1.7911	8 22 53.3	13.297
2	0 39 14.50	1.7937	8 36 10.3	13.269
3	0 41 2.20	1.7962	8 49 25.6	13.241
4	0 42 50.05	1.7988	9 2 39.2	13.211
5	0 44 38.06	1.8014	9 15 50.9	13.180
6	0 46 26.22	1.8041	9 29 0.8	13.149
7	0 48 14.55	1.8069	9 42 8.8	13.117
8	0 50 3.05	1.8098	9 55 14.8	13.084
9	0 51 51.73	1.8128	10 8 18.9	13.051
10	0 53 40.59	1.8157	10 21 21.0	13.017
11	0 55 29.62	1.8187	10 34 20.9	12.981
12	0 57 18.83	1.8218	10 47 18.7	12.945
13	0 59 8.23	1.8250	11 0 14.3	12.908
14	1 0 57.83	1.8282	11 13 7.7	12.871
15	1 2 47.62	1.8315	11 25 58.8	12.832
16	1 4 37.61	1.8349	11 38 47.5	12.793
17	1 6 27.81	1.8383	11 51 33.9	12.753
18	1 8 18.21	1.8418	12 4 17.9	12.712
19	1 10 8.82	1.8453	12 16 59.4	12.670
20	1 11 59.65	1.8489	12 29 38.3	12.627
21	1 13 50.69	1.8526	12 42 14.6	12.583
22	1 15 41.96	1.8563	12 54 48.3	12.539
23	1 17 33.45	1.8601	13 7 19.3	12.493
24	1 19 25.17	1.8639	N.13 19 47.5	12.447

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 19 25.17	1.8639	N.13 19 47.5	12.447
1	1 21 17.12	1.8678	13 32 12.9	12.400
2	1 23 9.31	1.8718	13 44 35.5	12.352
3	1 25 1.74	1.8758	13 56 55.2	12.303
4	1 26 54.41	1.8799	14 9 11.9	12.253
5	1 28 47.33	1.8840	14 21 25.6	12.203
6	1 30 40.49	1.8882	14 33 36.3	12.152
7	1 32 33.91	1.8925	14 45 43.9	12.099
8	1 34 27.59	1.8968	14 57 48.2	12.045
9	1 36 21.53	1.9012	15 9 49.3	11.991
10	1 38 15.73	1.9056	15 21 47.1	11.935
11	1 40 10.20	1.9101	15 33 41.5	11.879
12	1 42 4.94	1.9147	15 45 32.6	11.822
13	1 43 59.96	1.9192	15 57 20.2	11.764
14	1 45 55.25	1.9238	16 9 4.3	11.705
15	1 47 50.82	1.9286	16 20 44.8	11.645
16	1 49 46.68	1.9333	16 32 21.7	11.584
17	1 51 42.82	1.9381	16 43 54.9	11.522
18	1 53 39.25	1.9430	16 55 24.4	11.460
19	1 55 35.98	1.9479	17 6 50.1	11.396
20	1 57 33.00	1.9528	17 18 11.9	11.331
21	1 59 30.32	1.9579	17 29 29.8	11.265
22	2 1 27.95	1.9630	17 40 43.7	11.198
23	2 3 25.88	1.9681	N.17 51 53.5	11.130

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 5 24.12	1.9733	N.18 2 59.3	11.062
1	2 7 22.67	1.9785	18 14 0.9	10.992
2	2 9 21.54	1.9837	18 24 58.3	10.921
3	2 11 20.72	1.9890	18 35 51.4	10.849
4	2 13 20.22	1.9944	18 46 40.2	10.777
5	2 15 20.05	1.9998	18 57 24.6	10.703
6	2 17 20.20	2.0052	19 8 4.5	10.628
7	2 19 20.68	2.0107	19 18 39.9	10.552
8	2 21 21.49	2.0162	19 29 10.7	10.474
9	2 23 22.63	2.0218	19 39 36.8	10.396
10	2 25 24.11	2.0274	19 49 58.2	10.317
11	2 27 25.92	2.0330	20 0 14.8	10.237
12	2 29 28.07	2.0387	20 10 26.6	10.156
13	2 31 30.57	2.0445	20 20 33.5	10.073
14	2 33 33.41	2.0503	20 30 35.4	9.990
15	2 35 36.60	2.0561	20 40 32.3	9.906
16	2 37 40.14	2.0619	20 50 24.1	9.820
17	2 39 44.03	2.0678	21 0 10.7	9.733
18	2 41 48.27	2.0737	21 9 52.0	9.645
19	2 43 52.87	2.0796	21 19 28.1	9.557
20	2 45 57.82	2.0855	21 28 58.8	9.466
21	2 48 3.13	2.0915	21 38 24.0	9.374
22	2 50 8.80	2.0975	21 47 43.7	9.282
23	2 52 14.83	2.1035	21 56 57.9	9.189
24	2 54 21.22	2.1096	N.22 6 6.4	9.094

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 54 21.22	2.1096	N.22 6 6.4	9.094
1	2 56 27.98	2.1157	22 15 9.2	8.999
2	2 58 35.10	2.1218	22 24 6.3	8.902
3	3 0 42.59	2.1279	22 32 57.5	8.804
4	3 2 50.45	2.1341	22 41 42.8	8.706
5	3 4 58.68	2.1402	22 50 22.2	8.606
6	3 7 7.27	2.1463	22 58 55.5	8.504
7	3 9 16.23	2.1525	23 7 22.7	8.402
8	3 11 25.57	2.1587	23 15 43.7	8.298
9	3 13 35.28	2.1649	23 23 58.5	8.194
10	3 15 45.36	2.1712	23 32 7.0	8.087
11	3 17 55.82	2.1774	23 40 9.0	7.980
12	3 20 6.65	2.1836	23 48 4.6	7.872
13	3 22 17.85	2.1898	23 55 53.7	7.763
14	3 24 29.43	2.1960	24 3 36.2	7.652
15	3 26 41.38	2.2022	24 11 12.0	7.540
16	3 28 53.70	2.2084	24 18 41.0	7.427
17	3 31 6.39	2.2147	24 26 3.3	7.314
18	3 33 19.46	2.2209	24 33 18.7	7.199
19	3 35 32.90	2.2271	24 40 27.2	7.082
20	3 37 46.71	2.2333	24 47 28.6	6.964
21	3 40 0.89	2.2395	24 54 22.9	6.846
22	3 42 15.45	2.2457	25 1 10.1	6.726
23	3 44 30.37	2.2518	N.25 7 50.0	6.604

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 46 45.66	2.2579	N.25 14 22.6	6.482
1	3 49 1.32	2.2640	25 20 47.9	6.360
2	3 51 17.34	2.2701	25 27 5.8	6.235
3	3 53 33.73	2.2762	25 33 16.1	6.108
4	3 55 50.48	2.2822	25 39 18.8	5.982
5	3 58 7.59	2.2882	25 45 13.9	5.855
6	4 0 25.06	2.2941	25 51 1.4	5.727
7	4 2 42.88	2.3000	25 56 41.1	5.596
8	4 5 1.06	2.3060	26 2 12.9	5.464
9	4 7 19.60	2.3119	26 7 36.8	5.332
10	4 9 38.49	2.3177	26 12 52.7	5.198
11	4 11 57.72	2.3234	26 18 0.5	5.063
12	4 14 17.30	2.3292	26 23 0.3	4.928
13	4 16 37.22	2.3348	26 27 51.9	4.791
14	4 18 57.48	2.3405	26 32 35.2	4.652
15	4 21 18.08	2.3461	26 37 10.2	4.513
16	4 23 39.01	2.3516	26 41 36.8	4.373
17	4 26 0.27	2.3571	26 45 55.0	4.232
18	4 28 21.86	2.3625	26 50 4.7	4.090
19	4 30 43.77	2.3678	26 54 5.8	3.947
20	4 33 6.00	2.3732	26 57 58.3	3.802
21	4 35 28.55	2.3784	27 1 42.1	3.657
22	4 37 51.41	2.3836	27 5 17.1	3.511
23	4 40 14.58	2.3887	27 8 43.4	3.364
24	4 42 38.06	2.3938	N.27 12 0.8	3.215

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 42 38.06	2.3938	N.27 12 0.8	3.215
1	4 45 1.84	2.3987	27 15 9.2	3.066
2	4 47 25.91	2.4036	27 18 8.7	2.916
3	4 49 50.27	2.4084	27 20 59.1	2.764
4	4 52 14.92	2.4131	27 23 40.4	2.612
5	4 54 39.84	2.4177	27 26 12.5	2.458
6	4 57 5.04	2.4223	27 28 35.4	2.304
7	4 59 30.51	2.4268	27 30 49.0	2.149
8	5 1 56.25	2.4312	27 32 53.3	1.993
9	5 4 22.25	2.4355	27 34 48.2	1.837
10	5 6 48.51	2.4397	27 36 33.7	1.679
11	5 9 15.02	2.4438	27 38 9.7	1.521
12	5 11 41.77	2.4478	27 39 36.2	1.362
13	5 14 8.76	2.4518	27 40 53.1	1.202
14	5 16 35.99	2.4556	27 42 0.4	1.041
15	5 19 3.44	2.4593	27 42 58.0	0.879
16	5 21 31.11	2.4630	27 43 45.9	0.717
17	5 23 59.00	2.4666	27 44 24.0	0.553
18	5 26 27.10	2.4700	27 44 52.3	0.390
19	5 28 55.40	2.4733	27 45 10.8	0.226
20	5 31 23.90	2.4765	27 45 19.4	+0.061
21	5 33 52.58	2.4796	27 45 18.1	−0.104
22	5 36 21.45	2.4827	27 45 6.9	0.271
23	5 38 50.50	2.4856	N.27 44 45.6	0.438

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 41 19.72	2.4883	N.27 44 14.3	0.605
1	5 43 49.10	2.4910	27 43 33.0	0.773
2	5 46 18.64	2.4936	27 42 41.5	0.942
3	5 48 48.33	2.4961	27 41 39.9	1.112
4	5 51 18.17	2.4984	27 40 28.1	1.281
5	5 53 48.14	2.5006	27 39 6.2	1.450
6	5 56 18.24	2.5027	27 37 34.1	1.620
7	5 58 48.46	2.5047	27 35 51.8	1.791
8	6 1 18.80	2.5066	27 33 59.2	1.962
9	6 3 49.25	2.5083	27 31 56.3	2.134
10	6 6 19.80	2.5100	27 29 43.1	2.306
11	6 8 50.45	2.5116	27 27 19.6	2.477
12	6 11 21.19	2.5130	27 24 45.8	2.649
13	6 13 52.01	2.5142	27 22 1.7	2.822
14	6 16 22.90	2.5154	27 19 7.2	2.995
15	6 18 53.86	2.5165	27 16 2.3	3.168
16	6 21 24.88	2.5174	27 12 47.0	3.342
17	6 23 55.95	2.5182	27 9 21.3	3.514
18	6 26 27.07	2.5190	27 5 45.3	3.687
19	6 28 58.23	2.5196	27 1 58.9	3.861
20	6 31 29.42	2.5201	26 58 2.0	4.035
21	6 34 0.64	2.5205	26 53 54.7	4.208
22	6 36 31.88	2.5207	26 49 37.0	4.382
23	6 39 3.13	2.5208	26 45 8.9	4.556
24	6 41 34.38	2.5208	N.26 40 30.3	4.729

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 41 34.38	2.5208	N.26 40 30.3	4.729
1	6 44 5.63	2.5207	26 35 41.4	4.902
2	6 46 36.87	2.5206	26 30 42.1	5.074
3	6 49 8.10	2.5203	26 25 32.5	5.247
4	6 51 39.31	2.5199	26 20 12.5	5.420
5	6 54 10.49	2.5194	26 14 42.1	5.593
6	6 56 41.64	2.5188	26 9 1.3	5.766
7	6 59 12.75	2.5181	26 3 10.2	5.937
8	7 1 43.81	2.5172	25 57 8.8	6.108
9	7 4 14.82	2.5163	25 50 57.2	6.279
10	7 6 45.77	2.5153	25 44 35.3	6.451
11	7 9 16.65	2.5142	25 38 3.1	6.622
12	7 11 47.47	2.5130	25 31 20.7	6.792
13	7 14 18.21	2.5116	25 24 28.1	6.962
14	7 16 48.86	2.5102	25 17 25.3	7.131
15	7 19 19.43	2.5087	25 10 12.4	7.299
16	7 21 49.90	2.5071	25 2 49.4	7.468
17	7 24 20.28	2.5055	24 55 16.3	7.636
18	7 26 50.56	2.5037	24 47 33.1	7.803
19	7 29 20.73	2.5018	24 39 39.9	7.969
20	7 31 50.78	2.4998	24 31 36.8	8.135
21	7 34 20.71	2.4978	24 23 23.7	8.300
22	7 36 50.52	2.4957	24 15 0.8	8.464
23	7 39 20.20	2.4936	N.24 6 28.0	8.628

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 41 49.75	2.4913	N.23 57 45.4	8.792
1	7 44 19.16	2.4890	23 48 53.0	8.953
2	7 46 48.43	2.4867	23 39 51.0	9.114
3	7 49 17.56	2.4842	23 30 39.3	9.275
4	7 51 46.54	2.4817	23 21 18.0	9.435
5	7 54 15.36	2.4791	23 11 47.1	9.594
6	7 56 44.03	2.4765	23 2 6.7	9.752
7	7 59 12.54	2.4738	22 52 16.9	9.908
8	8 1 40.88	2.4710	22 42 17.7	10.064
9	8 4 9.06	2.4682	22 32 9.2	10.219
10	8 6 37.07	2.4654	22 21 51.4	10.373
11	8 9 4.91	2.4625	22 11 24.4	10.527
12	8 11 32.57	2.4595	22 0 48.2	10.678
13	8 14 0.05	2.4565	21 50 3.0	10.829
14	8 16 27.35	2.4535	21 39 8.7	10.979
15	8 18 54.47	2.4504	21 28 5.5	11.127
16	8 21 21.40	2.4472	21 16 53.5	11.274
17	8 23 48.14	2.4441	21 5 32.6	11.421
18	8 26 14.69	2.4409	20 54 3.0	11.566
19	8 28 41.05	2.4377	20 42 24.7	11.710
20	8 31 7.22	2.4345	20 30 37.8	11.852
21	8 33 33.19	2.4312	20 18 42.5	11.992
22	8 35 58.96	2.4279	20 6 38.8	12.132
23	8 38 24.54	2.4247	19 54 26.7	12.272
24	8 40 49.92	2.4213	N.19 42 6.2	12.410

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 40 49.92	2.4213	N.19 42 6.2	12.410
1	8 43 15.10	2.4180	19 29 37.5	12.545
2	8 45 40.08	2.4147	19 17 0.8	12.678
3	8 48 4.86	2.4113	19 4 16.1	12.812
4	8 50 29.44	2.4079	18 51 23.4	12.944
5	8 52 53.81	2.4045	18 38 22.8	13.074
6	8 55 17.98	2.4012	18 25 14.5	13.202
7	8 57 41.95	2.3978	18 11 58.5	13.330
8	9 0 5.72	2.3944	17 58 34.9	13.457
9	9 2 29.28	2.3910	17 45 3.7	13.582
10	9 4 52.64	2.3877	17 31 25.1	13.704
11	9 7 15.80	2.3843	17 17 39.2	13.825
12	9 9 38.76	2.3810	17 3 46.1	13.945
13	9 12 1.52	2.3777	16 49 45.8	14.063
14	9 14 24.08	2.3743	16 35 38.5	14.179
15	9 16 46.43	2.3709	16 21 24.3	14.294
16	9 19 8.59	2.3677	16 7 3.2	14.408
17	9 21 30.56	2.3645	15 52 35.3	14.520
18	9 23 52.33	2.3612	15 38 0.8	14.630
19	9 26 13.91	2.3580	15 23 19.7	14.738
20	9 28 35.29	2.3548	15 8 32.2	14.845
21	9 30 56.48	2.3516	14 53 38.3	14.950
22	9 33 17.48	2.3484	14 38 38.2	15.053
23	9 35 38.29	2.3453	N.14 23 32.0	15.154

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 37 58.91	2.3422	N.14 8 19.7	15.254
1	9 40 19.35	2.3392	13 53 1.5	15.352
2	9 42 39.61	2.3361	13 37 37.5	15.448
3	9 44 59.68	2.3331	13 22 7.7	15.543
4	9 47 19.58	2.3302	13 6 32.3	15.636
5	9 49 39.31	2.3273	12 50 51.4	15.727
6	9 51 58.86	2.3244	12 35 5.1	15.816
7	9 54 18.24	2.3216	12 19 13.5	15.902
8	9 56 37.45	2.3188	12 3 16.8	15.987
9	9 58 56.50	2.3161	11 47 15.0	16.071
10	10 1 15.38	2.3134	11 31 8.3	16.152
11	10 3 34.11	2.3108	11 14 56.7	16.232
12	10 5 52.68	2.3082	10 58 40.4	16.310
13	10 8 11.09	2.3057	10 42 19.5	16.386
14	10 10 29.36	2.3032	10 25 54.1	16.460
15	10 12 47.48	2.3007	10 9 24.3	16.532
16	10 15 5.45	2.2983	9 52 50.2	16.602
17	10 17 23.28	2.2961	9 36 12.0	16.670
18	10 19 40.98	2.2938	9 19 29.8	16.737
19	10 21 58.54	2.2916	9 2 43.6	16.801
20	10 24 15.97	2.2894	8 45 53.7	16.863
21	10 26 33.27	2.2873	8 29 0.1	16.923
22	10 28 50.45	2.2853	8 12 2.9	16.982
23	10 31 7.51	2.2834	7 55 2.3	17.038
24	10 33 24.46	2.2815	N. 7 37 58.3	17.092

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 33 24.46	2.2815	N. 7 37 58.3	17.092
1	10 35 41.29	2.2797	7 20 51.2	17.144
2	10 37 58.02	2.2779	7 3 41.0	17.195
3	10 40 14.64	2.2762	6 46 27.8	17.243
4	10 42 31.16	2.2746	6 29 11.8	17.289
5	10 44 47.59	2.2731	6 11 53.1	17.334
6	10 47 3.93	2.2716	5 54 31.7	17.377
7	10 49 20.18	2.2701	5 37 7.9	17.416
8	10 51 36.34	2.2687	5 19 41.8	17.454
9	10 53 52.42	2.2674	5 2 13.4	17.491
10	10 56 8.43	2.2662	4 44 42.9	17.525
11	10 58 24.36	2.2649	4 27 10.4	17.557
12	11 0 40.22	2.2638	4 9 36.1	17.587
13	11 2 56.02	2.2629	3 52 0.0	17.614
14	11 5 11.77	2.2620	3 34 22.4	17.639
15	11 7 27.46	2.2611	3 16 43.3	17.663
16	11 9 43.10	2.2603	2 59 2.8	17.685
17	11 11 58.69	2.2595	2 41 21.1	17.705
18	11 14 14.24	2.2589	2 23 38.2	17.723
19	11 16 29.76	2.2583	2 5 54.4	17.738
20	11 18 45.24	2.2577	1 48 9.7	17.751
21	11 21 0.69	2.2573	1 30 24.3	17.762
22	11 23 16.12	2.2570	1 12 38.3	17.771
23	11 25 31.53	2.2567	N. 0 54 51.8	17.778

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 27 46.92	2.2564	N. 0 37 4.9	17.783
1	11 30 2.30	2.2563	0 19 17.8	17.786
2	11 32 17.68	2.2563	N. 0 1 30.6	17.787
3	11 34 33.05	2.2563	S. 0 16 16.6	17.785
4	11 36 48.43	2.2564	0 34 3.6	17.781
5	11 39 3.82	2.2565	0 51 50.3	17.776
6	11 41 19.21	2.2567	1 9 36.7	17.768
7	11 43 34.62	2.2570	1 27 22.5	17.758
8	11 45 50.05	2.2574	1 45 7.7	17.747
9	11 48 5.51	2.2579	2 2 52.2	17.733
10	11 50 21.00	2.2584	2 20 35.7	17.717
11	11 52 36.52	2.2589	2 38 18.2	17.699
12	11 54 52.07	2.2596	2 55 59.6	17.679
13	11 57 7.67	2.2604	3 13 39.7	17.657
14	11 59 23.32	2.2612	3 31 18.4	17.632
15	12 1 39.01	2.2620	3 48 55.6	17.606
16	12 3 54.76	2.2630	4 6 31.1	17.577
17	12 6 10.57	2.2640	4 24 4.8	17.547
18	12 8 26.44	2.2651	4 41 36.7	17.514
19	12 10 42.38	2.2663	4 59 6.5	17.479
20	12 12 58.39	2.2675	5 16 34.2	17.442
21	12 15 14.48	2.2688	5 33 59.6	17.404
22	12 17 30.65	2.2702	5 51 22.7	17.363
23	12 19 46.90	2.2716	6 8 43.2	17.320
24	12 22 3.24	2.2731	S. 6 26 1.1	17.275

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 22 3.24	2.2731	S. 6 26 1.1	17.275
1	12 24 19.67	2.2747	6 43 16.2	17.228
2	12 26 36.20	2.2763	7 0 28.4	17.179
3	12 28 52.82	2.2779	7 17 37.7	17.128
4	12 31 9.55	2.2797	7 34 43.8	17.075
5	12 33 26.39	2.2815	7 51 46.7	17.021
6	12 35 43.33	2.2833	8 8 46.3	16.964
7	12 38 0.39	2.2853	8 25 42.4	16.905
8	12 40 17.57	2.2873	8 42 34.9	16.843
9	12 42 34.87	2.2894	8 59 23.6	16.780
10	12 44 52.30	2.2915	9 16 8.5	16.716
11	12 47 9.85	2.2937	9 32 49.5	16.649
12	12 49 27.54	2.2960	9 49 26.4	16.580
13	12 51 45.37	2.2982	10 5 59.1	16.509
14	12 54 3.33	2.3005	10 22 27.5	16.437
15	12 56 21.43	2.3029	10 38 51.5	16.362
16	12 58 39.68	2.3053	10 55 11.0	16.286
17	13 0 58.07	2.3078	11 11 25.8	16.207
18	13 3 16.61	2.3103	11 27 35.9	16.127
19	13 5 35.31	2.3129	11 43 41.1	16.045
20	13 7 54.16	2.3155	11 59 41.3	15.961
21	13 10 13.17	2.3182	12 15 36.4	15.875
22	13 12 32.34	2.3209	12 31 26.3	15.787
23	13 14 51.68	2.3237	S. 12 47 10.9	15.698

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 17 11.18	2.3264	S. 13 2 50.1	15.607
1	13 19 30.85	2.3292	13 18 23.7	15.513
2	13 21 50.69	2.3322	13 33 51.7	15.419
3	13 24 10.71	2.3351	13 49 14.0	15.322
4	13 26 30.90	2.3380	14 4 30.4	15.224
5	13 28 51.27	2.3409	14 19 40.9	15.124
6	13 31 11.81	2.3439	14 34 45.3	15.022
7	13 33 32.54	2.3470	14 49 43.5	14.918
8	13 35 53.45	2.3500	15 4 35.5	14.813
9	13 38 14.54	2.3531	15 19 21.1	14.706
10	13 40 35.82	2.3562	15 34 0.2	14.597
11	13 42 57.28	2.3593	15 48 32.8	14.487
12	13 45 18.93	2.3624	16 2 58.7	14.375
13	13 47 40.77	2.3656	16 17 17.8	14.262
14	13 50 2.80	2.3687	16 31 30.1	14.147
15	13 52 25.02	2.3719	16 45 35.4	14.029
16	13 54 47.43	2.3751	16 59 33.6	13.911
17	13 57 10.03	2.3783	17 13 24.7	13.792
18	13 59 32.83	2.3816	17 27 8.6	13.670
19	14 1 55.82	2.3847	17 40 45.1	13.547
20	14 4 19.00	2.3879	17 54 14.2	13.423
21	14 6 42.37	2.3911	18 7 35.8	13.297
22	14 9 5.93	2.3943	18 20 49.8	13.169
23	14 11 29.69	2.3976	18 33 56.1	13.040
24	14 13 53.64	2.4007	S. 18 46 54.6	12.909

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 13 53.64	2.4007	S.18 46 54.6	12.909
1	14 16 17.78	2.4039	18 59 45.2	12.777
2	14 18 42.11	2.4072	19 12 27.9	12.645
3	14 21 6.64	2.4104	19 25 2.6	12.511
4	14 23 31.36	2.4135	19 37 29.2	12.375
5	14 25 56.26	2.4165	19 49 47.6	12.237
6	14 28 21.34	2.4196	20 1 57.7	12.098
7	14 30 46.61	2.4227	20 13 59.4	11.959
8	14 33 12.07	2.4259	20 25 52.8	11.819
9	14 35 37.72	2.4290	20 37 37.7	11.677
10	14 38 3.55	2.4319	20 49 14.0	11.533
11	14 40 29.55	2.4348	21 0 41.6	11.388
12	14 42 55.73	2.4378	21 12 0.5	11.242
13	14 45 22.09	2.4406	21 23 10.6	11.095
14	14 47 48.62	2.4437	21 34 11.9	10.947
15	14 50 15.33	2.4465	21 45 4.3	10.798
16	14 52 42.20	2.4492	21 55 47.7	10.648
17	14 55 9.24	2.4520	22 6 22.1	10.496
18	14 57 36.44	2.4547	22 16 47.3	10.343
19	15 0 3.80	2.4573	22 27 3.3	10.190
20	15 2 31.32	2.4600	22 37 10.1	10.037
21	15 4 59.00	2.4626	22 47 7.7	9.882
22	15 7 26.83	2.4650	22 56 55.9	9.725
23	15 9 54.80	2.4674	S.23 6 34.7	9.568

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 12 22.92	2.4698	S.23 16 4.1	9.411
1	15 14 51.18	2.4721	23 25 24.0	9.252
2	15 17 19.57	2.4743	23 34 34.3	9.092
3	15 19 48.10	2.4766	23 43 35.0	8.931
4	15 22 16.76	2.4787	23 52 26.0	8.770
5	15 24 45.54	2.4806	24 1 7.4	8.609
6	15 27 14.43	2.4825	24 9 39.1	8.447
7	15 29 43.44	2.4844	24 18 1.0	8.283
8	15 32 12.56	2.4862	24 26 13.0	8.118
9	15 34 41.79	2.4880	24 34 15.2	7.954
10	15 37 11.12	2.4896	24 42 7.5	7.789
11	15 39 40.54	2.4911	24 49 49.9	7.623
12	15 42 10.05	2.4926	24 57 22.3	7.457
13	15 44 39.65	2.4940	25 4 44.7	7.290
14	15 47 9.33	2.4952	25 11 57.1	7.123
15	15 49 39.08	2.4964	25 18 59.5	6.956
16	15 52 8.90	2.4975	25 25 51.8	6.787
17	15 54 38.78	2.4986	25 32 34.0	6.618
18	15 57 8.73	2.4996	25 39 6.0	6.449
19	15 59 38.73	2.5003	25 45 27.9	6.280
20	16 2 8.77	2.5010	25 51 39.6	6.111
21	16 4 38.85	2.5017	25 57 41.2	5.942
22	16 7 8.97	2.5022	26 3 32.6	5.771
23	16 9 39.11	2.5025	26 9 13.7	5.599
24	16 12 9.27	2.5027	S.26 14 44.5	5.428

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 12 9.27	2.5027	S.26 14 44.5	5.428
1	16 14 39.44	2.5030	26 20 5.1	5.258
2	16 17 9.63	2.5032	26 25 15.5	5.088
3	16 19 39.82	2.5031	26 30 15.7	4.917
4	16 22 10.00	2.5030	26 35 5.6	4.746
5	16 24 40.18	2.5028	26 39 45.2	4.575
6	16 27 10.34	2.5024	26 44 14.6	4.404
7	16 29 40.47	2.5020	26 48 33.7	4.232
8	16 32 10.58	2.5015	26 52 42.5	4.061
9	16 34 40.65	2.5007	26 56 41.0	3.889
10	16 37 10.67	2.4999	27 0 29.3	3.719
11	16 39 40.64	2.4991	27 4 7.3	3.548
12	16 42 10.56	2.4981	27 7 35.1	3.377
13	16 44 40.41	2.4969	27 10 52.6	3.207
14	16 47 10.19	2.4957	27 13 59.9	3.037
15	16 49 39.90	2.4944	27 16 57.0	2.866
16	16 52 9.52	2.4929	27 19 43.8	2.696
17	16 54 39.05	2.4913	27 22 20.5	2.527
18	16 57 8.48	2.4896	27 24 47.0	2.357
19	16 59 37.80	2.4878	27 27 3.4	2.188
20	17 2 7.02	2.4860	27 29 9.6	2.019
21	17 4 36.12	2.4840	27 31 5.7	1.851
22	17 7 5.10	2.4818	27 32 51.7	1.683
23	17 9 33.94	2.4795	S.27 34 27.6	1.515

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 12 2.64	2.4771	S.27 35 53.5	1.348
1	17 14 31.19	2.4747	27 37 9.4	1.182
2	17 16 59.60	2.4721	27 38 15.3	1.015
3	17 19 27.85	2.4694	27 39 11.2	0.849
4	17 21 55.93	2.4667	27 39 57.2	0.684
5	17 24 23.85	2.4638	27 40 33.3	0.520
6	17 26 51.59	2.4608	27 40 59.6	0.357
7	17 29 19.14	2.4577	27 41 16.1	0.193
8	17 31 46.51	2.4545	27 41 22.8	−0.030
9	17 34 13.68	2.4512	27 41 19.7	+0.132
10	17 36 40.65	2.4478	27 41 6.9	0.293
11	17 39 7.41	2.4443	27 40 44.5	0.453
12	17 41 33.96	2.4407	27 40 12.5	0.613
13	17 44 0.29	2.4369	27 39 30.9	0.773
14	17 46 26.39	2.4331	27 38 39.8	0.932
15	17 48 52.26	2.4292	27 37 39.1	1.090
16	17 51 17.89	2.4252	27 36 29.0	1.246
17	17 53 43.29	2.4212	27 35 9.6	1.402
18	17 56 8.44	2.4170	27 33 40.8	1.557
19	17 58 33.33	2.4128	27 32 2.7	1.712
20	18 0 57.97	2.4085	27 30 15.4	1.865
21	18 3 22.35	2.4041	27 28 18.9	2.017
22	18 5 46.46	2.3995	27 26 13.3	2.170
23	18 8 10.29	2.3949	27 23 58.5	2.322
24	18 10 33.85	2.3903	S.27 21 34.7	2.472

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 10 33.85	2.3903	S. 27 21 34.7	2.472
1	18 12 57.13	2.3856	27 19 1.9	2.621
2	18 15 20.12	2.3807	27 16 20.2	2.768
3	18 17 42.82	2.3758	27 13 29.7	2.915
4	18 20 5.22	2.3708	27 10 30.4	3.062
5	18 22 27.32	2.3659	27 7 22.3	3.208
6	18 24 49.13	2.3609	27 4 5.5	3.352
7	18 27 10.63	2.3557	27 0 40.1	3.495
8	18 29 31.81	2.3504	26 57 6.1	3.637
9	18 31 52.68	2.3452	26 53 23.6	3.779
10	18 34 13.23	2.3398	26 49 32.6	3.920
11	18 36 33.46	2.3345	26 45 33.2	4.059
12	18 38 53.37	2.3291	26 41 25.5	4.197
13	18 41 12.95	2.3236	26 37 9.5	4.335
14	18 43 32.20	2.3180	26 32 45.3	4.471
15	18 45 51.11	2.3124	26 28 13.0	4.606
16	18 48 9.69	2.3068	26 23 32.6	4.740
17	18 50 27.93	2.3012	26 18 44.2	4.872
18	18 52 45.83	2.2954	26 13 47.9	5.004
19	18 55 3.38	2.2897	26 8 43.7	5.136
20	18 57 20.59	2.2839	26 3 31.6	5.266
21	18 59 37.45	2.2781	25 58 11.8	5.394
22	19 1 53.96	2.2722	25 52 44.3	5.522
23	19 4 10.12	2.2664	S. 25 47 9.2	5.648

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 6 25.93	2.2605	S. 25 41 26.6	5.773
1	19 8 41.38	2.2545	25 35 36.4	5.898
2	19 10 56.47	2.2486	25 29 38.8	6.021
3	19 13 11.21	2.2427	25 23 33.9	6.142
4	19 15 25.59	2.2367	25 17 21.7	6.263
5	19 17 39.61	2.2306	25 11 2.3	6.383
6	19 19 53.26	2.2245	25 4 35.7	6.502
7	19 22 6.55	2.2185	24 58 2.0	6.620
8	19 24 19.48	2.2125	24 51 21.3	6.736
9	19 26 32.05	2.2064	24 44 33.7	6.851
10	19 28 44.25	2.2003	24 37 39.2	6.966
11	19 30 56.09	2.1942	24 30 37.8	7.079
12	19 33 7.56	2.1882	24 23 29.7	7.191
13	19 35 18.67	2.1821	24 16 14.9	7.302
14	19 37 29.41	2.1760	24 8 53.5	7.411
15	19 39 39.79	2.1699	24 1 25.6	7.519
16	19 41 49.80	2.1638	23 53 51.2	7.627
17	19 43 59.45	2.1578	23 46 10.3	7.734
18	19 46 8.74	2.1517	23 38 23.1	7.839
19	19 48 17.66	2.1457	23 30 29.6	7.943
20	19 50 26.22	2.1397	23 22 29.9	8.047
21	19 52 34.42	2.1336	23 14 24.0	8.149
22	19 54 42.25	2.1275	23 6 12.0	8.250
23	19 56 49.72	2.1215	22 57 54.0	8.349
24	19 58 56.83	2.1155	S. 22 49 30.1	8.448

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 58 56.83	2.1155	S. 22 49 30.1	8.448
1	20 1 3.58	2.1096	22 41 0.3	8.546
2	20 3 9.98	2.1037	22 32 24.6	8.643
3	20 5 16.02	2.0977	22 23 43.2	8.738
4	20 7 21.70	2.0918	22 14 56.1	8.833
5	20 9 27.03	2.0859	22 6 3.3	8.926
6	20 11 32.01	2.0801	21 57 5.0	9.017
7	20 13 36.64	2.0742	21 48 1.2	9.108
8	20 15 40.92	2.0684	21 38 52.0	9.199
9	20 17 44.85	2.0626	21 29 37.3	9.289
10	20 19 48.43	2.0568	21 20 17.3	9.377
11	20 21 51.67	2.0512	21 10 52.1	9.463
12	20 23 54.57	2.0455	21 1 21.7	9.549
13	20 25 57.13	2.0398	20 51 46.2	9.634
14	20 27 59.35	2.0342	20 42 5.6	9.718
15	20 30 1.23	2.0286	20 32 20.0	9.801
16	20 32 2.78	2.0231	20 22 29.5	9.883
17	20 34 4.00	2.0176	20 12 34.0	9.965
18	20 36 4.89	2.0121	20 2 33.7	10.044
19	20 38 5.45	2.0067	19 52 28.7	10.123
20	20 40 5.69	2.0013	19 42 19.0	10.201
21	20 42 5.61	1.9960	19 32 4.6	10.277
22	20 44 5.21	1.9907	19 21 45.7	10.353
23	20 46 4.49	1.9854	S. 19 11 22.2	10.428

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 48 3.46	1.9802	S. 19 0 54.3	10.502
1	20 50 2.11	1.9750	18 50 22.0	10.575
2	20 52 0.46	1.9699	18 39 45.3	10.647
3	20 53 58.50	1.9648	18 29 4.4	10.718
4	20 55 56.24	1.9598	18 18 19.2	10.788
5	20 57 53.68	1.9548	18 7 29.8	10.857
6	20 59 50.82	1.9499	17 56 36.3	10.926
7	21 1 47.67	1.9451	17 45 38.7	10.993
8	21 3 44.23	1.9402	17 34 37.1	11.059
9	21 5 40.49	1.9354	17 23 31.6	11.124
10	21 7 36.47	1.9307	17 12 22.2	11.189
11	21 9 32.17	1.9260	17 1 8.9	11.252
12	21 11 27.59	1.9214	16 49 51.9	11.314
13	21 13 22.74	1.9168	16 38 31.2	11.377
14	21 15 17.61	1.9122	16 27 6.7	11.438
15	21 17 12.21	1.9078	16 15 38.6	11.498
16	21 19 6.55	1.9035	16 4 6.9	11.557
17	21 21 0.63	1.8991	15 52 31.7	11.615
18	21 22 54.44	1.8948	15 40 53.1	11.672
19	21 24 48.00	1.8906	15 29 11.1	11.728
20	21 26 41.31	1.8864	15 17 25.7	11.785
21	21 28 34.37	1.8823	15 5 36.9	11.840
22	21 30 27.19	1.8782	14 53 44.9	11.893
23	21 32 19.76	1.8742	14 41 49.7	11.946
24	21 34 12.09	1.8703	S. 14 29 51.4	11.998

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	21	34	12.09	1.8703	S.	14	29	51.4	11.998
1	21	36	4.19	1.8664		14	17	50.0	12.049
2	21	37	56.06	1.8625		14	5	45.5	12.100
3	21	39	47.69	1.8587		13	53	38.0	12.150
4	21	41	39.10	1.8550		13	41	27.5	12.198
5	21	43	30.29	1.8514		13	29	14.2	12.246
6	21	45	21.27	1.8479		13	16	58.0	12.293
7	21	47	12.04	1.8443		13	4	39.0	12.340
8	21	49	2.59	1.8407		12	52	17.2	12.386
9	21	50	52.93	1.8373		12	39	52.7	12.431
10	21	52	43.07	1.8341		12	27	25.5	12.474
11	21	54	33.02	1.8308		12	14	55.8	12.517
12	21	56	22.77	1.8276		12	2	23.5	12.559
13	21	58	12.33	1.8244		11	49	48.7	12.601
14	22	0	1.70	1.8213		11	37	11.4	12.642
15	22	1	50.88	1.8183		11	24	31.6	12.682
16	22	3	39.89	1.8153		11	11	49.5	12.721
17	22	5	28.72	1.8123		10	59	5.1	12.759
18	22	7	17.37	1.8094		10	46	18.4	12.797
19	22	9	5.85	1.8067		10	33	29.4	12.834
20	22	10	54.17	1.8040		10	20	38.3	12.869
21	22	12	42.33	1.8013		10	7	45.1	12.904
22	22	14	30.33	1.7987		9	54	49.8	12.939
23	22	16	18.18	1.7962	S.	9	41	52.4	12.973

SATURDAY 30.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	22	18	5.87	1.7937	S.	9	28	53.0	13.006
1	22	19	53.42	1.7913		9	15	51.7	13.038
2	22	21	40.83	1.7889		9	2	48.5	13.070
3	22	23	28.09	1.7866		8	49	43.3	13.102
4	22	25	15.22	1.7844		8	36	36.3	13.131
5	22	27	2.22	1.7823		8	23	27.6	13.160
6	22	28	49.10	1.7803		8	10	17.1	13.189
7	22	30	35.86	1.7782		7	57	4.9	13.217
8	22	32	22.49	1.7762		7	43	51.1	13.243
9	22	34	9.00	1.7743		7	30	35.7	13.270
10	22	35	55.40	1.7725		7	17	18.7	13.295
11	22	37	41.70	1.7707		7	4	0.3	13.319
12	22	39	27.89	1.7690		6	50	40.4	13.343
13	22	41	13.98	1.7674		6	37	19.1	13.367
14	22	42	59.98	1.7658		6	23	56.4	13.390
15	22	44	45.88	1.7642		6	10	32.3	13.412
16	22	46	31.69	1.7628		5	57	6.9	13.433
17	22	48	17.42	1.7615		5	43	40.3	13.453
18	22	50	3.07	1.7602		5	30	12.5	13.473
19	22	51	48.64	1.7589		5	16	43.5	13.492
20	22	53	34.13	1.7577		5	3	13.4	13.510
21	22	55	19.56	1.7566		4	49	42.3	13.528
22	22	57	4.92	1.7555		4	36	10.1	13.545
23	22	58	50.22	1.7546		4	22	36.9	13.561
24	23	0	35.47	1.7537	S.	4	9	2.8	13.576

SUNDAY 31.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	23	0	35.47	1.7537	S.	4	9	2.8	13.576
1	23	2	20.66	1.7528		3	55	27.8	13.591
2	23	4	5.80	1.7520		3	41	51.9	13.605
3	23	5	50.90	1.7512		3	28	15.2	13.618
4	23	7	35.95	1.7505		3	14	37.8	13.630
5	23	9	20.96	1.7499		3	0	59.6	13.642
6	23	11	5.94	1.7494		2	47	20.7	13.653
7	23	12	50.89	1.7489		2	33	41.2	13.663
8	23	14	35.81	1.7485		2	20	1.1	13.673
9	23	16	20.71	1.7482		2	6	20.4	13.682
10	23	18	5.59	1.7478		1	52	39.2	13.690
11	23	19	50.45	1.7476		1	38	57.6	13.698
12	23	21	35.30	1.7475		1	25	15.5	13.705
13	23	23	20.15	1.7474		1	11	33.0	13.711
14	23	25	4.99	1.7473		0	57	50.2	13.716
15	23	26	49.83	1.7474		0	44	7.2	13.719
16	23	28	34.68	1.7476		0	30	23.9	13.723
17	23	30	19.54	1.7477		0	16	40.4	13.727
18	23	32	4.40	1.7479	S.	0	2	56.7	13.729
19	23	33	49.28	1.7482	N.	0	10	47.1	13.731
20	23	35	34.18	1.7486		0	24	31.0	13.732
21	23	37	19.11	1.7490		0	38	14.9	13.732
22	23	39	4.06	1.7495		0	51	58.8	13.731
23	23	40	49.05	1.7501	N.	1	5	42.6	13.729

MONDAY, APRIL 1.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	23	42	34.07	1.7507	N.	1	19	26.3	13.727

PHASES OF THE MOON.

	d	h	m
● New Moon, . . .	3	15	17.5
☽ First Quarter, . . .	11	16	1.3
○ Full Moon, . . .	18	9	6.8
☾ Last Quarter, . .	25	4	50.0

	d	h
☾ Apogee, ...	4	4.5
☾ Perigee, ...	18	5.8
☾ Apogee, ...	31	2.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III$^{\rm h}$.	P. L. of Diff.	VI$^{\rm h}$.	P. L. of Diff.	IX$^{\rm h}$.	P. L. of Diff.
1	Antares	W.	64° 10′ 55″	3094	65° 40′ 38″	3029	67° 10′ 15″	3032	68° 39′ 48″	3036
	Sun	E.	28 35 4	3413	27 13 2	3419	25 51 7	3424	24 29 18	3430
5	Aldebaran	E.	69 0 26	3153	67 33 21	3153	66 6 15	3153	64 39 10	3153
	Pollux	E.	111 24 30	3078	109 55 54	3078	108 27 17	3076	106 58 38	3073
6	Sun	W.	25 52 10	3443	27 13 38	3439	28 35 10	3434	29 56 48	3430
	Mars	E.	40 19 40	3316	38 55 47	3314	37 31 52	3313	36 7 56	3312
	Aldebaran	E.	57 23 53	3157	55 56 52	3158	54 29 52	3158	53 2 53	3159
	Pollux	E.	99 34 40	3061	98 5 43	3058	96 36 42	3055	95 7 37	3052
7	Sun	W.	36 46 18	3404	38 8 30	3399	39 30 48	3393	40 53 13	3386
	Mars	E.	29 7 50	3306	27 43 46	3306	26 19 41	3306	24 55 36	3307
	Aldebaran	E.	45 48 22	3169	44 21 36	3172	42 54 53	3176	41 28 15	3180
	Pollux	E.	87 41 2	3030	86 11 27	3026	84 41 46	3020	83 11 58	3015
8	Sun	W.	47 47 12	3351	49 10 25	3343	50 33 47	3334	51 57 19	3325
	Aldebaran	E.	34 16 55	3223	32 51 13	3236	31 25 47	3253	30 0 41	3274
	Pollux	E.	75 41 13	2984	74 10 40	2977	72 39 58	2969	71 9 7	2962
9	Sun	W.	58 57 38	3276	60 22 17	3266	61 47 8	3255	63 12 12	3244
	Pollux	E.	63 32 19	2919	62 0 24	2910	60 28 18	2900	58 55 59	2891
	Regulus	E.	100 25 28	2906	98 53 17	2897	97 20 54	2887	95 48 18	2876
10	Sun	W.	70 21 2	3181	71 47 34	3168	73 14 22	3154	74 41 26	3139
	α Arietis	W.	24 22 33	2909	25 54 41	2887	27 27 17	2866	29 0 20	2846
	Pollux	E.	51 11 6	2836	49 37 25	2825	48 3 29	2812	46 29 17	2801
	Regulus	E.	88 1 47	2819	86 27 44	2806	84 53 24	2794	83 18 48	2780
11	Sun	W.	82 1 15	3063	83 30 10	3047	84 59 24	3030	86 28 59	3014
	α Arietis	W.	36 51 47	2753	38 27 17	2735	40 3 10	2717	41 39 27	2699
	Mars	W.	18 20 50	3037	19 50 17	3006	21 20 22	2978	22 51 2	2952
	Pollux	E.	38 34 19	2738	36 58 29	2725	35 22 23	2713	33 46 0	2700
	Regulus	E.	75 21 19	2710	73 44 53	2695	72 8 7	2680	70 31 0	2665
12	Sun	W.	94 2 12	2926	95 33 58	2908	97 6 7	2890	98 38 39	2871
	α Arietis	W.	49 46 52	2610	51 25 34	2591	53 4 41	2573	54 44 13	2555
	Mars	W.	30 32 7	2837	32 5 47	2816	33 39 54	2795	35 14 29	2774
	Aldebaran	W.	20 17 1	3233	21 42 31	3128	23 10 7	3039	24 39 31	2963
	Pollux	E.	25 39 59	2643	24 2 3	2635	22 23 55	2628	20 45 38	2625
	Regulus	E.	62 20 6	2583	60 40 48	2566	59 1 7	2549	57 21 2	2533
13	Sun	W.	106 27 23	2776	108 2 22	2756	109 37 47	2738	111 13 37	2719
	α Arietis	W.	63 8 14	2462	64 50 20	2444	66 32 52	2426	68 15 50	2408
	Mars	W.	43 14 11	2672	44 51 28	2652	46 29 13	2632	48 7 25	2612
	Aldebaran	W.	32 27 2	2696	34 3 46	2657	35 41 23	2621	37 19 50	2587
	Regulus	E.	48 54 35	2444	47 12 3	2426	45 29 5	2408	43 45 42	2390
	Spica	E.	102 57 6	2447	101 14 38	2429	99 31 45	2411	97 48 26	2393
14	Sun	W.	119 19 9	2624	120 57 32	2605	122 36 20	2586	124 15 34	2569
	α Arietis	W.	76 57 14	2316	78 42 50	2299	80 28 51	2281	82 15 18	2264
	Mars	W.	56 25 10	2514	58 6 4	2495	59 47 24	2477	61 29 10	2458
	Aldebaran	W.	45 43 2	2441	47 25 39	2415	49 8 52	2391	50 52 40	2368

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Antares	W.	70° 9′ 16″	3039	71° 38′ 40″	3043	73° 8′ 0″	3046	74° 37′ 16″	3048
	Sun	E.	23 7 35	3435	21 45 58	3441	20 24 28	3446	19 3 4	3454
5	Aldebaran	E.	63 12 5	3154	61 45 1	3155	60 17 58	3155	58 50 55	3156
	Pollux	E.	105 29 56	3071	104 1 11	3069	102 32 24	3067	101 3 34	3064
6	Sun	W.	31 18 31	3425	32 40 19	3420	34 2 13	3415	35 24 13	3410
	Mars	E.	34 43 58	3310	33 19 58	3309	31 55 57	3307	30 31 54	3306
	Aldebaran	E.	51 35 55	3161	50 8 59	3162	48 42 4	3164	47 15 12	3166
	Pollux	E.	93 38 28	3047	92 9 14	3043	90 39 55	3039	89 10 31	3035
7	Sun	W.	42 15 45	3379	43 38 25	3373	45 1 12	3365	46 24 8	3358
	Mars	E.	23 31 33	3309	22 7 32	3313	20 43 36	3319	19 19 46	3326
	Aldebaran	E.	40 1 42	3186	38 35 16	3193	37 8 59	3201	35 42 51	3211
	Pollux	E.	81 42 4	3009	80 12 3	3003	78 41 54	2997	77 11 38	2990
8	Sun	W.	53 21 1	3316	54 44 54	3307	56 8 57	3298	57 33 11	3287
	Aldebaran	E.	28 35 59	3299	27 11 46	3330	25 48 9	3367	24 25 15	3415
	Pollux	E.	69 38 6	2954	68 6 55	2946	66 35 34	2937	65 4 2	2928
9	Sun	W.	64 37 29	3232	66 3 0	3220	67 28 46	3208	68 54 46	3194
	Pollux	E.	57 23 28	2880	55 50 43	2869	54 17 45	2859	52 44 33	2847
	Regulus	E.	94 15 28	2866	92 42 25	2854	91 9 7	2843	89 35 35	2831
10	Sun	W.	76 8 48	3125	77 36 27	3110	79 4 24	3095	80 32 40	3079
	α Arietis	W.	30 33 48	2827	32 7 41	2808	33 41 59	2789	35 16 41	2771
	Pollux	E.	44 54 50	2788	43 20 7	2775	41 45 7	2763	40 9 51	2751
	Regulus	E.	81 43 54	2767	80 8 43	2753	78 33 14	2739	76 57 26	2725
11	Sun	W.	87 58 54	2997	89 29 11	2980	90 59 49	2962	92 30 49	2944
	α Arietis	W.	43 16 8	2681	44 53 13	2663	46 30 42	2646	48 8 35	2628
	Mars	W.	24 22 15	2927	25 53 59	2904	27 26 13	2881	28 58 56	2859
	Pollux	E.	32 9 20	2687	30 32 23	2675	28 55 10	2664	27 17 42	2653
	Regulus	E.	68 53 33	2649	67 15 44	2633	65 37 34	2616	63 59 1	2600
12	Sun	W.	100 11 35	2852	101 44 55	2833	103 18 40	2815	104 52 49	2795
	α Arietis	W.	56 24 10	2536	58 4 33	2518	59 45 21	2500	61 26 34	2481
	Mars	W.	36 49 31	2753	38 25 0	2732	40 0 57	2712	41 37 21	2692
	Aldebaran	W.	26 10 30	2897	27 42 53	2839	29 16 30	2787	30 51 15	2740
	Pollux	E.	19 7 17	2624	17 28 55	2629	15 50 40	2642	14 12 42	2669
	Regulus	E.	55 40 34	2515	53 59 41	2497	52 18 24	2480	50 36 42	2462
13	Sun	W.	112 49 52	2699	114 26 33	2681	116 3 39	2661	117 41 11	2642
	α Arietis	W.	69 59 14	2389	71 43 4	2371	73 27 21	2353	75 12 4	2334
	Mars	W.	49 46 4	2592	51 25 10	2572	53 4 43	2553	54 44 43	2533
	Aldebaran	W.	38 59 4	2554	40 39 2	2524	42 19 42	2494	44 1 3	2467
	Regulus	E.	42 1 53	2372	40 17 38	2355	38 32 58	2337	36 47 52	2320
	Spica	E.	96 4 41	2375	94 20 30	2357	92 35 54	2339	90 50 51	2322
14	Sun	W.	125 55 12	2551	127 35 14	2533	129 15 41	2516	130 56 32	2499
	α Arietis	W.	84 2 11	2247	85 49 29	2230	87 37 12	2213	89 25 20	2198
	Mars	W.	63 11 22	2440	64 54 0	2422	66 37 3	2405	68 20 31	2387
	Aldebaran	W.	52 37 1	2345	54 21 55	2323	56 7 21	2302	57 53 17	2282

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P.L. of Diff.	IXh.	P. L. of Diff.
14	Regulus	E.	35° 2′ 21″	2302	33° 16′ 24″	2284	31° 30′ 1″	2267	29° 43′ 13″	2251
	Spica	E.	89 5 23	2304	87 19 29	2286	85 33 9	2269	83 46 24	2251
15	Sun	W.	132 37 46	2483	134 19 23	2467	136 1 22	2452	137 43 43	2438
	α Arietis	W.	91 13 51	2182	93 2 46	2167	94 52 4	2151	96 41 45	2137
	Mars	W.	70 4 24	2371	71 48 41	2355	73 33 21	2338	75 18 25	2323
	Aldebaran	W.	59 39 43	2263	61 26 38	2244	63 14 0	2226	65 1 49	2209
	Pollux	W.	16 44 6	2285	18 30 27	2249	20 17 42	2218	22 5 43	2191
	Spica	E.	74 46 22	2170	72 57 10	2155	71 7 34	2140	69 17 36	2125
16	Mars	W.	84 9 5	2254	85 56 12	2242	87 43 37	2231	89 31 19	2220
	Aldebaran	W.	74 6 58	2134	75 57 6	2121	77 47 33	2109	79 38 18	2098
	Pollux	W.	31 14 31	2094	33 5 40	2078	34 57 13	2064	36 49 8	2052
	Spica	E.	60 2 27	2061	58 10 27	2050	56 18 10	2039	54 25 37	2029
	Antares	E.	105 53 4	2055	104 0 56	2044	102 8 30	2033	100 15 48	2023
17	Mars	W.	98 33 24	2178	100 22 25	2172	102 11 35	2167	104 0 53	2163
	Aldebaran	W.	88 55 54	2055	90 48 2	2050	92 40 19	2045	94 32 43	2041
	Pollux	W.	46 13 6	2002	48 6 37	1996	50 0 18	1989	51 54 9	1984
	Spica	E.	44 59 22	1991	43 5 33	1986	41 11 36	1981	39 17 32	1977
	Antares	E.	90 48 40	1982	88 54 38	1977	87 0 27	1972	85 6 8	1967
18	Aldebaran	W.	103 55 50	2035	105 48 29	2037	107 41 6	2040	109 33 38	2044
	Pollux	W.	61 25 3	1970	63 19 24	1971	65 13 44	1972	67 8 3	1974
	Regulus	W.	24 24 14	1961	26 18 50	1961	28 13 26	1962	30 8 1	1963
	Spica	E.	29 46 17	1975	27 52 3	1977	25 57 53	1981	24 3 49	1987
	Antares	E.	75 33 14	1958	73 38 33	1958	71 43 52	1959	69 49 13	1961
19	Pollux	W.	76 38 30	1994	78 32 13	2001	80 25 45	2009	82 19 6	2017
	Regulus	W.	39 39 47	1985	41 33 45	1991	43 27 33	1999	45 21 9	2008
	Antares	E.	60 17 12	1984	58 23 12	1990	56 29 22	1998	54 35 44	2007
	Jupiter	E.	113 4 36	2035	111 11 56	2041	109 19 26	2049	107 27 8	2058
20	Pollux	W.	91 42 15	2068	93 34 3	2081	95 25 31	2094	97 16 39	2107
	Regulus	W.	54 45 32	2059	56 37 35	2072	58 29 18	2085	60 20 41	2098
	Antares	E.	45 11 13	2058	43 19 9	2071	41 27 25	2083	39 36 0	2097
	Jupiter	E.	98 9 15	2109	96 18 30	2122	94 28 4	2135	92 37 58	2149
	α Aquilæ	E.	98 35 54	2747	97 0 17	2754	95 24 49	2763	93 49 32	2773
21	Regulus	W.	69 32 14	2172	71 21 23	2189	73 10 7	2206	74 58 26	2223
	Spica	W.	15 39 32	2221	17 27 28	2229	19 15 12	2239	21 2 41	2251
	Antares	E.	30 24 24	2172	28 35 15	2188	26 46 30	2206	24 58 11	2223
	Jupiter	E.	83 32 52	2224	81 45 0	2241	79 57 33	2258	78 10 31	2274
	α Aquilæ	E.	85 57 20	2852	84 23 59	2872	82 51 4	2894	81 18 38	2918
	Venus	E.	108 31 5	2271	106 41 23	2289	104 58 7	2306	103 12 16	2324
	Sun	E.	142 54 28	2494	141 13 7	2512	139 32 10	2528	137 51 36	2546
22	Regulus	W.	83 53 33	2312	85 39 15	2331	87 24 29	2350	89 9 16	2368
	Spica	W.	29 55 7	2327	31 40 27	2344	33 25 22	2362	35 9 52	2379
	Jupiter	E.	69 21 49	2365	67 37 24	2384	65 53 26	2403	64 9 55	2422
	α Aquilæ	E.	73 44 36	3060	72 15 38	3094	70 47 21	3129	69 19 47	3166
	Venus	E.	94 29 46	2419	92 46 39	2439	91 4 0	2459	89 21 49	2480
	Sun	E.	129 35 1	2639	127 56 59	2658	126 19 23	2678	124 42 14	2698

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Regulus	E.	27° 56′ 1″	2234	26° 8′ 24″	2217	24° 20′ 22″	2202	22° 31′ 57″	2186
	Spica	E.	81 59 13	2235	80 11 37	2218	78 23 36	2202	76 35 11	2186
15	Sun	W.	139 26 24	2424	141 9 25	2410	142 52 46	2397	144 36 25	2386
	α Arietis	W.	98 31 47	2123	100 22 11	2110	102 12 55	2097	104 3 59	2085
	Mars	W.	77 3 51	2309	78 49 38	2294	80 35 47	2280	82 22 16	2266
	Aldebaran	W.	66 50 3	2192	68 38 42	2176	70 27 45	2161	72 17 11	2147
	Pollux	W.	23 54 24	2167	25 43 41	2146	27 33 30	2128	29 23 47	2110
	Spica	E.	67 27 15	2111	65 36 33	2098	63 45 31	2085	61 54 9	2072
16	Mars	W.	91 19 17	2210	93 7 29	2201	94 55 55	2192	96 44 34	2185
	Aldebaran	W.	81 29 20	2088	83 20 38	2078	85 12 11	2070	87 3 57	2062
	Pollux	W.	38 41 22	2040	40 33 54	2029	42 26 43	2019	44 19 48	2010
	Spica	E.	52 32 48	2020	50 39 45	2012	48 46 29	2004	46 53 1	1997
	Antares	E.	98 22 50	2014	96 29 37	2005	94 36 10	1997	92 42 31	1989
17	Mars	W.	105 50 17	2159	107 39 46	2156	109 29 20	2155	111 18 56	2153
	Aldebaran	W.	96 25 14	2037	98 17 50	2035	100 10 29	2034	102 3 10	2035
	Pollux	W.	53 48 9	1979	55 42 16	1976	57 36 28	1974	59 30 44	1972
	Spica	E.	37 23 22	1975	35 29 8	1973	33 34 51	1972	31 40 33	1974
	Antares	E.	83 11 42	1963	81 17 10	1961	79 22 34	1959	77 27 55	1958
18	Aldebaran	W.	111 26 3	2049	113 18 21	2055	115 10 29	2062	117 2 26	2071
	Pollux	W.	69 2 19	1976	70 56 31	1979	72 50 38	1984	74 44 38	1989
	Regulus	W.	32 2 33	1966	33 57 1	1969	35 51 24	1974	37 45 40	1979
	Spica	E.	22 9 54	1994	20 16 11	2004	18 22 43	2017	16 29 35	2033
	Antares	E.	67 54 37	1964	66 0 6	1967	64 5 40	1972	62 11 22	1977
19	Pollux	W.	84 12 14	2026	86 5 8	2035	87 57 47	2046	89 50 9	2057
	Regulus	W.	47 14 31	2016	49 7 40	2026	51 0 34	2036	52 53 12	2048
	Antares	E.	52 42 20	2016	50 49 10	2025	48 56 14	2035	47 3 35	2046
	Jupiter	E.	105 35 4	2067	103 43 14	2076	101 51 38	2086	100 0 18	2098
20	Pollux	W.	99 7 27	2122	100 57 53	2137	102 47 56	2152	104 37 36	2168
	Regulus	W.	62 11 44	2111	64 2 26	2126	65 52 45	2141	67 42 41	2157
	Antares	E.	37 44 56	2111	35 54 14	2126	34 3 54	2141	32 13 57	2157
	Jupiter	E.	90 48 13	2163	88 58 49	2177	87 9 47	2192	85 21 8	2208
	α Aquilæ	E.	92 14 29	2785	90 39 42	2800	89 5 14	2815	87 31 6	2832
21	Regulus	W.	76 46 20	2240	78 33 48	2258	80 20 49	2276	82 7 24	2294
	Spica	W.	22 49 53	2264	24 36 45	2279	26 23 16	2295	28 9 23	2311
	Antares	E.	23 10 17	2240	21 22 49	2258	19 35 48	2276	17 49 13	2295
	Jupiter	E.	76 23 54	2292	74 37 43	2311	72 51 59	2328	71 6 41	2346
	α Aquilæ	E.	79 46 42	2943	78 15 18	2970	76 44 28	2998	75 14 13	3029
	Venus	E.	101 26 52	2343	99 41 55	2361	97 57 24	2380	96 13 21	2400
	Sun	E.	136 11 27	2564	134 31 42	2583	132 52 23	2601	131 13 29	2620
22	Regulus	W.	90 53 36	2387	92 37 29	2406	94 20 55	2426	96 3 53	2444
	Spica	W.	36 53 57	2397	38 37 36	2415	40 20 49	2433	42 3 36	2453
	Jupiter	E.	62 26 52	2441	60 44 16	2460	59 2 6	2479	57 20 23	2499
	α Aquilæ	E.	67 52 57	3204	66 26 53	3246	65 1 38	3288	63 37 13	3334
	Venus	E.	87 40 7	2499	85 58 53	2520	84 18 8	2540	82 37 51	2561
	Sun	E.	123 5 32	2719	121 29 17	2738	119 53 28	2759	118 18 6	2779

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Regulus	W.	97° 46′ 25″	2463	99° 28′ 30″	2482	101° 10′ 8″	2501	102° 51′ 20″	2520
	Spica	W.	43 45 56	2471	45 27 50	2489	47 9 19	2508	48 50 21	2526
	Jupiter	E.	55 39 8	2518	53 58 20	2537	52 17 58	2556	50 38 2	2575
	α Aquilæ	E.	62 13 41	3381	60 51 3	3431	59 29 22	3484	58 8 40	3540
	Venus	E.	80 58 3	2581	79 18 42	2602	77 39 50	2623	76 1 26	2643
	Sun	E.	116 43 10	2799	115 8 41	2819	113 34 38	2840	112 1 2	2860
24	Spica	W.	57 9 14	2617	58 47 46	2634	60 25 55	2652	62 3 40	2669
	Jupiter	E.	42 24 52	2669	40 47 30	2687	39 10 32	2704	37 33 58	2722
	α Aquilæ	E.	51 41 31	3872	50 27 43	3951	49 15 15	4037	48 4 12	4128
	Venus	E.	67 56 13	2743	66 20 30	2763	64 45 13	2782	63 10 21	2801
	α Pegasi	E.	93 48 26	2800	92 13 58	2817	90 39 52	2835	89 6 9	2852
	Sun	E.	104 19 26	2958	102 48 21	2978	101 17 41	2997	99 47 24	3016
25	Spica	W.	70 6 46	2750	71 42 19	2766	73 17 31	2782	74 52 23	2796
	Antares	W.	24 13 25	2746	25 49 4	2763	27 24 21	2778	28 59 18	2792
	Jupiter	E.	29 36 55	2808	28 2 37	2824	26 28 40	2840	24 55 4	2855
	Venus	E.	55 22 11	2893	53 49 43	2911	52 17 38	2928	50 45 55	2945
	Fomalhaut	E.	60 28 8	3198	59 1 56	3229	57 36 21	3261	56 11 24	3294
	α Pegasi	E.	81 23 10	2939	79 51 41	2957	78 20 34	2975	76 49 50	2992
	Sun	E.	92 21 42	3105	90 53 39	3122	89 25 56	3138	87 58 33	3155
26	Spica	W.	82 42 4	2865	84 15 8	2877	85 47 56	2890	87 20 28	2902
	Antares	W.	36 49 23	2862	38 22 31	2874	39 55 23	2887	41 27 59	2898
	Venus	E.	43 12 30	3025	41 42 48	3041	40 13 26	3056	38 44 22	3069
	Fomalhaut	E.	49 16 45	3483	47 56 2	3526	46 36 7	3574	45 17 4	3623
	α Pegasi	E.	69 21 33	3079	67 52 58	3097	66 24 45	3114	64 56 53	3132
	Sun	E.	80 46 22	3231	79 20 49	3244	77 55 32	3258	76 30 31	3271
27	Spica	W.	94 59 29	2955	96 30 38	2965	98 1 34	2974	99 32 19	2983
	Antares	W.	49 7 26	2952	50 38 39	2961	52 9 41	2970	53 40 31	2979
	Venus	E.	31 23 19	3138	29 55 56	3152	28 28 49	3165	27 1 58	3179
	Fomalhaut	E.	38 56 26	3935	37 43 42	4016	36 32 18	4103	35 22 19	4200
	α Pegasi	E.	57 42 58	3225	56 17 18	3243	54 52 0	3263	53 27 5	3284
	Sun	E.	69 29 8	3331	68 5 32	3341	66 42 8	3351	65 18 55	3361
28	Antares	W.	61 12 8	3016	62 42 1	3023	64 11 45	3029	65 41 22	3034
	α Pegasi	E.	46 28 48	3400	45 6 31	3426	43 44 44	3454	42 23 29	3486
	Sun	E.	58 25 32	3404	57 3 20	3411	55 41 16	3418	54 19 20	3425
29	Antares	W.	73 7 52	3057	74 36 54	3060	76 5 52	3064	77 34 46	3067
	α Aquilæ	W.	35 34 55	6288	36 17 14	6051	37 1 55	5843	37 48 48	5654
	Jupiter	W.	18 45 2	3126	20 12 40	3128	21 40 16	3129	23 7 50	3131
	Sun	E.	47 31 28	3454	46 10 12	3458	44 49 1	3463	43 27 55	3467
30	Antares	W.	84 58 31	3076	86 27 10	3078	87 55 47	3078	89 24 24	3078
	α Aquilæ	W.	42 11 44	4960	43 9 11	4858	44 8 0	4763	45 8 7	4677
	Jupiter	W.	30 25 12	3137	31 52 37	3138	33 20 1	3138	34 47 25	3138
	Sun	E.	36 43 33	3485	35 22 52	3488	34 2 15	3492	32 41 42	3495
31	α Aquilæ	W.	50 25 13	4341	51 31 28	4289	52 38 31	4240	53 46 19	4195
	Jupiter	W.	42 4 26	3135	43 31 53	3133	44 59 22	3133	46 26 52	3131

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
23	Regulus	W.	104° 32′ 6″	2538	106° 12′ 26″	2557	107° 52′ 20″	2576	109° 31′ 48″	2593
	Spica	W.	50 30 58	2544	52 11 10	2563	53 50 56	2581	55 30 17	2599
	Jupiter	E.	48 58 33	2594	47 19 30	2612	45 40 52	2631	44 2 39	2650
	α Aquilæ	E.	56 49 0	3598	55 30 24	3661	54 12 55	3727	52 56 36	3797
	Venus	E.	74 23 29	2663	72 45 59	2684	71 8 57	2704	69 32 22	2723
	Sun	E.	110 27 52	2880	108 55 8	2900	107 22 49	2920	105 50 55	2939
24	Spica	W.	63 41 2	2686	65 18 1	2702	66 54 38	2719	68 30 53	2735
	Jupiter	E.	35 57 48	2740	34 22 1	2757	32 46 37	2774	31 11 35	2791
	α Aquilæ	E.	46 54 37	4227	45 46 36	4333	44 40 14	4447	43 35 35	4572
	Venus	E.	61 35 55	2820	60 1 53	2838	58 28 15	2857	56 55 1	2876
	α Pegasi	E.	87 32 48	2869	85 59 50	2887	84 27 14	2905	82 55 1	2922
	Sun	E.	98 17 31	3034	96 48 0	3052	95 18 52	3070	93 50 6	3088
25	Spica	W.	76 26 56	2811	78 1 10	2825	79 35 6	2838	81 8 44	2852
	Antares	W.	30 33 56	2807	32 8 15	2821	33 42 15	2835	35 15 58	2848
	Jupiter	E.	23 21 48	2872	21 48 53	2887	20 16 18	2903	18 44 3	2918
	Venus	E.	49 14 33	2962	47 43 32	2977	46 12 51	2994	44 42 31	3009
	Fomalhaut	E.	54 47 5	3328	53 23 26	3365	52 0 29	3402	50 38 15	3441
	α Pegasi	E.	75 19 27	3009	73 49 26	3027	72 19 47	3044	70 50 29	3062
	Sun	E.	86 31 30	3171	85 4 46	3186	83 38 20	3201	82 12 12	3216
26	Spica	W.	88 52 44	2913	90 24 46	2924	91 56 34	2935	93 28 8	2946
	Antares	W.	43 0 21	2909	44 32 28	2920	46 4 21	2931	47 36 0	2942
	Venus	E.	37 15 35	3084	35 47 6	3098	34 18 54	3111	32 50 58	3125
	Fomalhaut	E.	43 58 55	3677	42 41 43	3733	41 25 31	3795	40 10 24	3862
	α Pegasi	E.	63 29 22	3150	62 2 13	3168	60 35 26	3187	59 9 1	3205
	Sun	E.	75 5 46	3283	73 41 15	3296	72 16 59	3308	70 52 57	3319
27	Spica	W.	101 2 53	2991	102 33 17	2999	104 3 31	3007	105 33 35	3014
	Antares	W.	55 11 10	2987	56 41 39	2995	58 11 58	3003	59 42 7	3009
	Venus	E.	25 35 24	3192	24 9 5	3206	22 43 3	3220	21 17 18	3235
	Fomalhaut	E.	34 13 53	4308	33 7 8	4429	32 2 13	4564	30 59 17	4717
	α Pegasi	E.	52 2 35	3305	50 38 29	3326	49 14 48	3350	47 51 34	3374
	Sun	E.	63 55 54	3370	62 33 3	3379	61 10 23	3388	59 47 53	3396
28	Antares	W.	67 10 52	3040	68 40 15	3044	70 9 33	3049	71 38 45	3053
	α Pegasi	E.	41 2 49	3519	39 42 46	3555	38 23 22	3594	37 4 41	3636
	Sun	E.	52 57 32	3431	51 35 51	3438	50 14 17	3443	48 52 49	3449
29	Antares	W.	79 3 36	3069	80 32 23	3071	82 1 8	3073	83 29 51	3074
	α Aquilæ	W.	38 37 46	5486	39 28 40	5335	40 21 22	5197	41 15 46	5073
	Jupiter	W.	24 35 22	3133	26 2 52	3134	27 30 20	3135	28 57 47	3137
	Sun	E.	42 6 54	3471	40 45 57	3475	39 25 5	3479	38 4 17	3482
30	Antares	W.	90 53 0	3079	92 21 35	3078	93 50 11	3078	95 18 47	3078
	α Aquilæ	W.	46 9 26	4597	47 11 53	4526	48 15 22	4459	49 19 50	4398
	Jupiter	W.	36 14 48	3138	37 42 12	3138	39 9 36	3138	40 37 0	3136
	Sun	E.	31 21 12	3498	30 0 46	3502	28 40 24	3506	27 20 6	3510
31	α Aquilæ	W.	54 54 50	4153	56 4 1	4114	57 13 49	4077	58 24 13	4043
	Jupiter	W.	47 54 24	3129	49 21 58	3127	50 49 35	3125	52 17 14	3123

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	0 42 47.23	9.101	N. 4 36 17.2	+57.84	16 2.02	64.50	3 55.90	0.753
Tues.	2	0 46 25.74	9.106	4 59 22.8	57.63	16 1.74	64.52	3 37.90	0.748
Wed.	3	0 50 4.36	9.112	5 22 23.1	57.40	16 1.46	64.54	3 20.02	0.742
Thur.	4	0 53 43.13	9.118	5 45 17.8	57.15	16 1.19	64.56	3 2.28	0.735
Frid.	5	0 57 22.06	9.125	6 8 6.3	56.89	16 0.92	64.59	2 44.72	0.728
Sat.	6	1 1 1.17	9.133	6 30 48.5	56.61	16 0.65	64.62	2 27.33	0.720
Sun.	7	1 4 40.47	9.141	6 53 23.8	56.32	16 0.38	64.65	2 10.12	0.712
Mon.	8	1 8 19.98	9.150	7 15 51.9	56.01	16 0.11	64.69	1 53.12	0.703
Tues.	9	1 11 59.72	9.160	7 38 12.5	55.69	15 59.84	64.73	1 36.35	0.694
Wed.	10	1 15 39.70	9.170	8 0 25.3	55.36	15 59.58	64.77	1 19.82	0.684
Thur.	11	1 19 19.94	9.181	8 22 30.0	55.02	15 59.31	64.81	1 3.55	0.673
Frid.	12	1 23 0.45	9.193	8 44 26.1	54.66	15 59.05	64.86	0 47.55	0.661
Sat.	13	1 26 41.25	9.206	9 6 13.4	54.29	15 58.78	64.90	0 31.83	0.648
Sun.	14	1 30 22.36	9.219	9 27 51.9	53.90	15 58.52	64.95	0 16.43	0.635
Mon.	15	1 34 3.80	9.234	9 49 20.9	53.50	15 58.25	65.00	0 1.36	0.620
Tues.	16	1 37 45.60	9.249	10 10 40.0	53.09	15 57.99	65.06	0 13.36	0.605
Wed.	17	1 41 27.76	9.266	10 31 48.9	52.66	15 57.72	65.11	0 27.71	0.589
Thur.	18	1 45 10.30	9.282	10 52 47.8	52.22	15 57.46	65.17	0 41.67	0.573
Frid.	19	1 48 53.24	9.299	11 13 35.9	51.77	15 57.19	65.23	0 55.25	0.556
Sat.	20	1 52 36.62	9.317	11 34 12.9	51.31	15 56.93	65.29	1 8.39	0.539
Sun.	21	1 56 20.43	9.335	11 54 38.6	50.83	15 56.67	65.35	1 21.11	0.520
Mon.	22	2 0 4.68	9.354	12 14 52.8	50.34	15 56.41	65.42	1 33.37	0.501
Tues.	23	2 3 49.41	9.374	12 34 55.1	49.84	15 56.15	65.48	1 45.17	0.481
Wed.	24	2 7 34.62	9.394	12 54 45.2	49.32	15 55.89	65.55	1 56.48	0.461
Thur.	25	2 11 20.32	9.415	13 14 22.8	48.79	15 55.63	65.62	2 7.30	0.440
Frid.	26	2 15 6.52	9.436	13 33 47.3	48.24	15 55.38	65.69	2 17.62	0.419
Sat.	27	2 18 53.25	9.457	13 52 58.6	47.69	15 55.13	65.76	2 27.43	0.398
Sun.	28	2 22 40.49	9.479	14 11 56.3	47.12	15 54.88	65.84	2 36.71	0.376
Mon.	29	2 26 28.27	9.501	14 30 40.0	46.53	15 54.63	65.91	2 45.46	0.354
Tues.	30	2 30 16.59	9.524	14 49 9.4	45.92	15 54.39	65.99	2 53.68	0.331
Wed.	31	2 34 5.44	9.546	N.15 7 24.2	+45.30	15 54.15	66.07	3 1.37	0.309

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting $0^s.18$ from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from* / *added to* *Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	0 42 46.63	9.103	N. 4 36 13.4	+57.85	3 55.95	0.753	0 38 50.68
Tues.	2	0 46 25.18	9.108	4 59 19.3	57.64	3 37.95	0.748	0 42 47.23
Wed.	3	0 50 3.85	9.114	5 22 20.0	57.41	3 20.06	0.742	0 46 43.79
Thur.	4	0 53 42.66	9.120	5 45 14.9	57.16	3 2.32	0.735	0 50 40.34
Frid.	5	0 57 21.64	9.127	6 8 3.7	56.90	2 44.75	0.728	0 54 36.89
Sat.	6	1 1 0.80	9.135	6 30 46.2	56.62	2 27.36	0.720	0 58 33.44
Sun.	7	1 4 40.15	9.143	6 53 21.8	56.33	2 10.15	0.712	1 2 30.00
Mon.	8	1 8 19.70	9.152	7 15 50.1	56.02	1 53.15	0.703	1 6 26.55
Tues.	9	1 11 59.48	9.162	7 38 11.0	55.70	1 36.37	0.694	1 10 23.11
Wed.	10	1 15 39.50	9.172	8 0 24.1	55.37	1 19.84	0.684	1 14 19.66
Thur.	11	1 19 19.78	9.183	8 22 29.0	55.03	1 3.56	0.673	1 18 16.22
Frid.	12	1 23 0.33	9.195	8 44 25.4	54.67	0 47.56	0.661	1 22 12.77
Sat.	13	1 26 41.17	9.208	9 6 13.0	54.30	0 31.84	0.648	1 26 9.33
Sun.	14	1 30 22.32	9.221	9 27 51.6	53.91	0 16.44	0.635	1 30 5.88
Mon.	15	1 34 3.80	9.236	9 49 20.8	53.51	0 1.36	0.620	1 34 2.44
Tues.	16	1 37 45.63	9.251	10 10 40.2	53.10	0 13.36	0.605	1 37 58.99
Wed.	17	1 41 27.83	9.267	10 31 49.5	52.67	0 27.71	0.589	1 41 55.54
Thur.	18	1 45 10.41	9.283	10 52 48.5	52.23	0 41.68	0.573	1 45 52.09
Frid.	19	1 48 53.39	9.300	11 13 36.7	51.78	0 55.25	0.556	1 49 48.65
Sat.	20	1 52 36.80	9.318	11 34 13.9	51.32	1 8.40	0.539	1 53 45.20
Sun.	21	1 56 20.64	9.336	11 54 39.8	50.84	1 21.12	0.520	1 57 41.76
Mon.	22	2 0 4.93	9.355	12 14 54.2	50.35	1 33.38	0.501	2 1 38.31
Tues.	23	2 3 49.69	9.375	12 34 56.6	49.85	1 45.18	0.481	2 5 34.87
Wed.	24	2 7 34.93	9.395	12 54 46.9	49.33	1 56.49	0.461	2 9 31.42
Thur.	25	2 11 20.66	9.416	13 14 24.6	48 80	2 7.32	0.440	2 13 27.98
Frid.	26	2 15 6.89	9.437	13 33 49.2	48.25	2 17.64	0.419	2 17 24.53
Sat.	27	2 18 53.64	9.458	13 53 0.6	47.69	2 27.45	0.398	2 21 21.09
Sun.	28	2 22 40.91	9.480	14 11 58.4	47.12	2 36.73	0.376	2 25 17.64
Mon.	29	2 26 28.71	9.502	14 30 42.2	46.53	2 45.48	0.354	2 29 14.20
Tues.	30	2 30 17.05	9.525	14 49 11.7	45.92	2 53.70	0.331	2 33 10.75
Wed.	31	2 34 5.92	9.547	N.15 7 26.5	+45.30	3 1.39	0.309	2 37 7.31
								Diff. for 1 hour. $+9^{s}.8565$ (Table III.)

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	91	11 38 17.5	37 54.5	147.89	+0.23	9.9999909	+52.5	23 17 19.78
2	92	12 37 25.9	37 2.8	147.81	0.33	0.0001165	52.2	23 13 23.87
3	93	13 36 32.4	36 9.2	147.73	0.40	.0002414	51.9	23 9 27.95
4	94	14 35 36.8	35 13.5	147.64	0.45	.0003655	51.5	23 5 32.05
5	95	15 34 39.0	34 15.6	147.55	0.47	.0004889	51.3	23 1 36.15
6	96	16 33 39.0	33 15.5	147.45	0.45	.0006116	51.0	22 57 40.24
7	97	17 32 36.7	32 13.1	147.36	0.40	.0007336	50.7	22 53 44.33
8	98	18 31 32.2	31 8.5	147.27	0.33	.0008549	50.5	22 49 48.42
9	99	19 30 25.5	30 1.7	147.17	0.24	.0009758	50.3	22 45 52.52
10	100	20 29 16.4	28 52.4	147.07	+0.12	.0010964	50.2	22 41 56.61
11	101	21 28 5.0	27 40.9	146.98	−0.01	.0012167	50.0	22 38 0.70
12	102	22 26 51.4	26 27.2	146.89	0.15	.0013365	49.9	22 34 4.79
13	103	23 25 35.6	25 11.3	146.79	0.28	.0014561	49.8	22 30 8.88
14	104	24 24 17.6	23 53.2	146.70	0.39	.0015757	49.8	22 26 12.97
15	105	25 22 57.3	22 32.7	146.61	0.49	.0016953	49.8	22 22 17.06
16	106	26 21 34.9	21 10.2	146.53	0.58	.0018149	49.8	22 18 21.15
17	107	27 20 10.6	19 45.8	146.45	0.64	.0019345	49.8	22 14 25.25
18	108	28 18 44.5	18 19.6	146.37	0.67	.0020541	49.8	22 10 29.34
19	109	29 17 16.6	16 51.5	146.30	0.67	.0021735	49.7	22 6 33.43
20	110	30 15 46.8	15 21.5	146.22	0.63	.0022929	49.6	22 2 37.52
21	111	31 14 15.3	13 49.9	146.15	0.56	.0024120	49.5	21 58 41.61
22	112	32 12 42.2	12 16.7	146.08	0.46	.0025306	49.3	21 54 45.70
23	113	33 11 7.4	10 41.8	146.02	0.36	.0026486	49.0	21 50 49.79
24	114	34 9 31.0	9 5.3	145.95	0.25	.0027660	48.7	21 46 53.88
25	115	35 7 53.1	7 27.2	145.89	−0.13	.0028826	48.4	21 42 57.98
26	116	36 6 13.6	5 47.6	145.82	0.00	.0029983	48.0	21 39 2.07
27	117	37 4 32.6	4 6.5	145.76	+0.14	.0031129	47.4	21 35 6.16
28	118	38 2 50.1	2 23.9	145.69	0.27	.0032262	46.9	21 31 10.25
29	119	39 1 5.9	0 39.5	145.62	0.37	.0033380	46.2	21 27 14.34
30	120	39 59 20.0	58 53.4	145.55	0.45	.0034482	45.5	21 23 18.43
31	121	40 57 32.5	57 5.8	145.49	+0.51	0.0035568	+44.8	21 19 22.54

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January $0^d.0$.

Diff. for 1 hour.
$-9^s.8296$
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 44.7	14 45.6	54 0.1	+0.22	54 3.4	+0.33	23 41.6	1.66	28.4
2	14 46.8	14 48.5	54 8.0	0.44	54 13.8	0.53	δ		29.4
3	14 50.4	14 52.6	54 20.8	0.63	54 29.0	0.73	0 22.4	1.74	0.6
4	14 55.1	14 57.9	54 38.3	0.82	54 48.7	0.91	1 5.4	1.86	1.6
5	15 1.1	15 4.5	55 0.2	1.01	55 12.9	1.11	1 51.5	2.00	2.6
6	15 8.4	15 12.4	55 26.9	1.21	55 42.1	1.31	2 41.2	2.14	3.6
7	15 16.9	15 21.7	55 58.4	1.41	56 16.0	1.51	3 34.4	2.27	4.6
8	15 26.8	15 32.2	56 34.7	1.61	56 54.6	1.70	4 30.2	2.34	5.6
9	15 37.9	15 43.9	57 15.6	1.79	57 37.4	1.85	5 27.3	2.36	6.6
10	15 50.0	15 56.3	58 0.0	1.91	58 23.1	1.93	6 23.9	2.32	7.6
11	16 2.6	16 8.9	58 46.2	1.93	59 9.1	1.88	7 19.0	2.25	8.6
12	16 14.9	16 20.5	59 31.2	1.79	59 52.0	1.66	8 12.1	2.17	9.6
13	16 25.7	16 30.1	60 10.9	1.48	60 27.4	1.25	9 3.7	2.12	10.6
14	16 33.7	16 36.5	60 40.7	0.97	60 50.6	+0.66	9 54.6	2.12	11.6
15	16 38.0	16 38.5	60 56.5	+0.31	60 58.0	−0.05	10 45.9	2.17	12.6
16	16 37.7	16 35.8	60 55.2	−0.42	60 47.9	0.79	11 38.9	2.26	13.6
17	16 32.6	16 28.3	60 36.3	1.14	60 20.7	1.45	12 34.3	2.37	14.6
18	16 23.1	16 17.1	60 1.6	1.73	59 39.4	1.96	13 32.4	2.47	15.6
19	16 10.4	16 3.2	59 14.8	2.13	58 48.4	2.25	14 32.3	2.50	16.6
20	15 55.7	15 48.1	58 20.9	2.32	57 52.9	2.33	15 32.1	2.46	17.6
21	15 40.5	15 33.1	57 25.1	2.30	56 57.9	2.22	16 29.8	2.32	18.6
22	15 26.1	15 19.3	56 31.9	2.11	56 7.3	1.97	17 23.7	2.15	19.6
23	15 13.2	15 7.5	55 44.6	1.81	55 24.0	1.63	18 13.3	1.97	20.6
24	15 2.5	15 58.1	55 5.6	1.44	54 49.5	1.24	18 58.9	1.82	21.6
25	14 54.5	14 51.5	54 35.9	1.03	54 24.8	0.83	19 41.3	1.71	22.6
26	14 49.0	14 47.4	54 16.1	0.62	54 9.9	0.42	20 21.6	1.65	23.6
27	14 46.3	14 45.9	54 6.0	−0.23	54 4.4	−0.04	21 0.8	1.63	24.6
28	14 46.0	14 46.7	54 4.9	+0.13	54 7.4	+0.29	21 40.1	1.65	25.6
29	14 47.8	14 49.5	54 11.7	0.43	54 17.7	0.56	22 20.4	1.72	26.6
30	14 51.5	14 53.9	54 25.1	0.68	54 33.9	0.78	23 2.9	1.83	27.6
31	14 56.6	14 59.5	54 43.8	0.87	54 54.7	0.95	23 48.4	1.97	28.6
32	15 2.7	15 6.2	55 6.5	+1.02	55 19.1	+1.08	δ		29.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 42 34.07	1.7507	N. 1 19 26.3	13.727	0	1 8 30.88	1.8542	N.12 1 17.6	12.706
1	23 44 19.13	1.7513	1 33 9.9	13.725	1	1 10 22.24	1.8578	12 13 58.7	12.663
2	23 46 4.23	1.7521	1 46 53.3	13.721	2	1 12 13.82	1.8616	12 26 37.2	12.620
3	23 47 49.38	1.7529	2 0 36.4	13.716	3	1 14 5.63	1.8653	12 39 13.1	12.576
4	23 49 34.58	1.7538	2 14 19.2	13.711	4	1 15 57.66	1.8691	12 51 46.3	12.531
5	23 51 19.83	1.7547	2 28 1.7	13.706	5	1 17 49.92	1.8730	13 4 16.8	12.486
6	23 53 5.14	1.7557	2 41 43.9	13.700	6	1 19 42.42	1.8769	13 16 44.6	12.440
7	23 54 50.51	1.7567	2 55 25.7	13.692	7	1 21 35.15	1.8808	13 29 9.6	12.392
8	23 56 35.95	1.7579	3 9 7.0	13.683	8	1 23 28.12	1.8849	13 41 31.7	12.343
9	23 58 21.46	1.7592	3 22 47.7	13.674	9	1 25 21.34	1.8890	13 53 50.8	12.293
10	0 0 7.05	1.7604	3 36 27.9	13.665	10	1 27 14.80	1.8931	14 6 6.9	12.243
11	0 1 52.71	1.7617	3 50 7.5	13.655	11	1 29 8.51	1.8973	14 18 20.0	12.192
12	0 3 38.45	1.7631	4 3 46.5	13.644	12	1 31 2.47	1.9015	14 30 30.0	12.140
13	0 5 24.28	1.7646	4 17 24.8	13.632	13	1 32 56.69	1.9057	14 42 36.8	12.087
14	0 7 10.20	1.7660	4 31 2.3	13.619	14	1 34 51.16	1.9101	14 54 40.4	12.032
15	0 8 56.20	1.7675	4 44 39.1	13.606	15	1 36 45.90	1.9146	15 6 40.7	11.977
16	0 10 42.30	1.7692	4 58 15.1	13.592	16	1 38 40.91	1.9190	15 18 37.6	11.921
17	0 12 28.51	1.7710	5 11 50.1	13.576	17	1 40 36.18	1.9234	15 30 31.2	11.864
18	0 14 14.82	1.7728	5 25 24.2	13.560	18	1 42 31.72	1.9280	15 42 21.3	11.806
19	0 16 1.24	1.7746	5 38 57.3	13.543	19	1 44 27.54	1.9326	15 54 7.9	11.747
20	0 17 47.77	1.7764	5 52 29.4	13.527	20	1 46 23.63	1.9372	16 5 50.9	11.687
21	0 19 34.41	1.7783	6 6 0.5	13.509	21	1 48 20.00	1.9418	16 17 30.3	11.626
22	0 21 21.17	1.7804	6 19 30.5	13.490	22	1 50 16.65	1.9466	16 29 6.0	11.563
23	0 23 8.06	1.7825	N. 6 32 59.3	13.470	23	1 52 13.59	1.9514	N.16 40 37.9	11.499
	TUESDAY 2.					THURSDAY 4.			
0	0 24 55.07	1.7846	N. 6 46 26.9	13.450	0	1 54 10.82	1.9562	N.16 52 5.9	11.435
1	0 26 42.21	1.7868	6 59 53.3	13.428	1	1 56 8.34	1.9611	17 3 30.1	11.371
2	0 28 29.49	1.7892	7 13 18.3	13.406	2	1 58 6.15	1.9659	17 14 50.4	11.305
3	0 30 16.91	1.7914	7 26 42.0	13.383	3	2 0 4.25	1.9708	17 26 6.7	11.237
4	0 32 4.46	1.7937	7 40 4.3	13.359	4	2 2 2.65	1.9758	17 37 18.9	11.168
5	0 33 52.16	1.7962	7 53 25.1	13.334	5	2 4 1.35	1.9808	17 48 26.9	11.098
6	0 35 40.01	1.7987	8 6 44.4	13.309	6	2 6 0.35	1.9859	17 59 30.7	11.028
7	0 37 28.01	1.8013	8 20 2.2	13.283	7	2 7 59.66	1.9911	18 10 30.3	10.957
8	0 39 16.17	1.8039	8 33 18.4	13.256	8	2 9 59.28	1.9962	18 21 25.6	10.884
9	0 41 4.48	1.8066	8 46 32.9	13.227	9	2 11 59.20	2.0013	18 32 16.4	10.810
10	0 42 52.96	1.8094	8 59 45.7	13.198	10	2 13 59.44	2.0066	18 43 2.8	10.736
11	0 44 41.61	1.8123	9 12 56.7	13.169	11	2 15 59.99	2.0118	18 53 44.7	10.661
12	0 46 30.43	1.8152	9 26 6.0	13.139	12	2 18 0.86	2.0172	19 4 22.1	10.584
13	0 48 19.43	1.8181	9 39 13.4	13.107	13	2 20 2.05	2.0225	19 14 54.8	10.506
14	0 50 8.60	1.8210	9 52 18.9	13.075	14	2 22 3.56	2.0278	19 25 22.8	10.427
15	0 51 57.95	1.8241	10 5 22.4	13.042	15	2 24 5.38	2.0331	19 35 46.0	10.347
16	0 53 47.49	1.8272	10 18 23.9	13.008	16	2 26 7.53	2.0385	19 46 4.4	10.266
17	0 55 37.22	1.8303	10 31 23.4	12.974	17	2 28 10.00	2.0439	19 56 17.9	10.183
18	0 57 27.13	1.8335	10 44 20.8	12.938	18	2 30 12.80	2.0494	20 6 26.4	10.100
19	0 59 17.24	1.8369	10 57 16.0	12.902	19	2 32 15.93	2.0549	20 16 29.9	10.016
20	1 1 7.56	1.8403	11 10 9.0	12.864	20	2 34 19.39	2.0604	20 26 28.3	9.931
21	1 2 58.08	1.8437	11 22 59.7	12.825	21	2 36 23.18	20.659	20 36 21.6	9.845
22	1 4 48.80	1.8471	11 35 48.0	12.786	22	2 38 27.30	2.0715	20 46 9.7	9.757
23	1 6 39.73	1.8507	11 48 34.0	12.747	23	2 40 31.76	2.0771	20 55 52.4	9.667
24	1 8 30.88	1.8542	N.12 1 17.6	12.706	24	2 42 36.55	2.0827	N.21 5 29.7	9.577

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 5.					SUNDAY 7.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 42 36.55	2.0827	N.21 5 29.7	9.577	0	4 29 1.09	2.3424	N.26 40 37.8	3.975
1	2 44 41.68	2.0883	21 15 1.6	9.487	1	4 31 21.77	2.3469	26 44 32.1	3.833
2	2 46 47.15	2.0939	21 24 28.1	9.395	2	4 33 42.72	2.3513	26 48 17.8	3.690
3	2 48 52.95	2.0995	21 33 49.0	9.301	3	4 36 3.93	2.3556	26 51 54.9	3.547
4	2 50 59.09	2.1052	21 43 4.2	9.206	4	4 38 25.39	2.3598	26 55 23.4	3.403
5	2 53 5.57	2.1109	21 52 13.7	9.111	5	4 40 47.11	2.3641	26 58 43.3	3.258
6	2 55 12.40	2.1167	22 1 17.5	9.015	6	4 43 9.08	2.3682	27 1 54.4	3.112
7	2 57 19.57	2.1223	22 10 15.5	8.917	7	4 45 31.29	2.3722	27 4 56.7	2.965
8	2 59 27.08	2.1280	22 19 7.6	8.818	8	4 47 53.74	2.3762	27 7 50.2	2.817
9	3 1 34.93	2.1337	22 27 53.7	8.718	9	4 50 16.43	2.3801	27 10 34.8	2.669
10	3 3 43.12	2.1394	22 36 33.8	8.617	10	4 52 39.35	2.3838	27 13 10.5	2.520
11	3 5 51.66	2.1451	22 45 7.8	8.515	11	4 55 2.49	2.3874	27 15 37.2	2.370
12	3 8 0.54	2.1508	22 53 35.6	8.412	12	4 57 25.84	2.3910	27 17 54.9	2.219
13	3 10 9.76	2.1566	23 1 57.2	8.307	13	4 59 49.41	2.3946	27 20 3.5	2.068
14	3 12 19.33	2.1623	23 10 12.5	8.202	14	5 2 13.19	2.3981	27 22 3.0	1.917
15	3 14 29.24	2.1680	23 18 21.4	8.095	15	5 4 37.18	2.4015	27 23 53.5	1.765
16	3 16 39.49	2.1737	23 26 23.9	7.987	16	5 7 1.37	2.4047	27 25 34.8	1.611
17	3 18 50.08	2.1794	23 34 19.9	7.878	17	5 9 25.74	2.4078	27 27 6.8	1.457
18	3 21 1.02	2.1852	23 42 9.3	7.768	18	5 11 50.30	2.4108	27 28 29.6	1.302
19	3 23 12.30	2.1908	23 49 52.1	7.657	19	5 14 15.04	2.4138	27 29 43.1	1.147
20	3 25 23.92	2.1965	23 57 28.2	7.545	20	5 16 39.96	2.4167	27 30 47.3	0.992
21	3 27 35.88	2.2021	24 4 57.5	7.432	21	5 19 5.05	2.4195	27 31 42.1	0.835
22	3 29 48.17	2.2077	24 12 20.0	7.317	22	5 21 30.30	2.4222	27 32 27.5	0.678
23	3 32 0.80	2.2133	N.24 19 35.6	7.202	23	5 23 55.71	2.4247	N.27 33 3.5	0.522
SATURDAY 6.					MONDAY 8.				
0	3 34 13.77	2.2189	N.24 26 44.2	7.085	0	5 26 21.26	2.4271	N.27 33 30.1	0.364
1	3 36 27.07	2.2245	24 33 45.8	6.967	1	5 28 46.96	2.4295	27 33 47.2	0.206
2	3 38 40.71	2.2302	24 40 40.3	6.849	2	5 31 12.80	2.4318	27 33 54.8	+0.047
3	3 40 54.69	2.2357	24 47 27.7	6.730	3	5 33 38.78	2.4341	27 33 52.8	−0.113
4	3 43 9.00	2.2412	24 54 7.9	6.608	4	5 36 4.89	2.4361	27 33 41.2	0.272
5	3 45 23.63	2.2466	25 0 40.7	6.486	5	5 38 31.11	2.4380	27 33 20.1	0.432
6	3 47 38.59	2.2521	25 7 6.2	6.363	6	5 40 57.45	2.4399	27 32 49.4	0.592
7	3 49 53.88	2.2575	25 13 24.3	6.239	7	5 43 23.90	2.4417	27 32 9.1	0.753
8	3 52 9.49	2.2628	25 19 34.9	6.114	8	5 45 50.45	2.4433	27 31 19.1	0.914
9	3 54 25.42	2.2682	25 25 38.0	5.987	9	5 48 17.09	2.4448	27 30 19.4	1.076
10	3 56 41.67	2.2734	25 31 33.4	5.860	10	5 50 43.82	2.4462	27 29 10.0	1.237
11	3 58 58.23	2.2787	25 37 21.2	5.732	11	5 53 10.63	2.4475	27 27 50.9	1.398
12	4 1 15.11	2.2839	25 43 1.3	5.603	12	5 55 37.52	2.4487	27 26 22.2	1.560
13	4 3 32.30	2.2891	25 48 33.6	5.472	13	5 58 4.48	2.4498	27 24 43.7	1.722
14	4 5 49.80	2.2942	25 53 58.0	5.341	14	6 0 31.50	2.4508	27 22 55.5	1.885
15	4 8 7.61	2.2993	25 59 14.5	5.209	15	6 2 58.58	2.4517	27 20 57.5	2.048
16	4 10 25.72	2.3043	26 4 23.1	5.077	16	6 5 25.71	2.4526	27 18 49.7	2.211
17	4 12 44.13	2.3092	26 9 23.7	4.942	17	6 7 52.89	2.4533	27 16 32.2	2.374
18	4 15 2.83	2.3141	26 14 16.1	4.806	18	6 10 20.11	2.4539	27 14 4.9	2.537
19	4 17 21.82	2.3190	26 19 0.4	4.670	19	6 12 47.36	2.4543	27 11 27.8	2.699
20	4 19 41.11	2.3239	26 23 36.5	4.533	20	6 15 14.63	2.4547	27 8 41.0	2.862
21	4 22 0.69	2.3287	26 28 4.4	4.396	21	6 17 41.92	2.4550	27 5 44.4	3.025
22	4 24 20.55	2.3333	26 32 24.0	4.256	22	6 20 9.23	2.4552	27 2 38.0	3.188
23	4 26 40.68	2.3378	26 36 35.1	4.115	23	6 22 36.55	2.4552	26 59 21.8	3.352
24	4 29 1.09	2.3424	N.26 40 37.8	3.975	24	6 25 3.86	2.4552	N.26 55 55.8	3.514

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 9.					THURSDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 25 3.86	2.4552	N.26 55 55.8	3.514	0	8 21 15.01	2.3614	N.21 5 52.9	10.842
1	6 27 31.17	2.4551	26 52 20.1	3.677	1	8 23 36.60	2.3582	20 54 58.4	10.975
2	6 29 58.47	2.4548	26 48 34.6	3.840	2	8 25 58.00	2.3551	20 43 55.9	11.108
3	6 32 25.75	2.4545	26 44 39.3	4.003	3	8 28 19.21	2.3519	20 32 45.4	11.241
4	6 34 53.01	2.4541	26 40 34.2	4.166	4	8 30 40.23	2.3488	20 21 27.0	11.372
5	6 37 20.24	2.4535	26 36 19.4	4.328	5	8 33 1.07	2.3457	20 10 0.8	11.501
6	6 39 47.43	2.4528	26 31 54.9	4.490	6	8 35 21.72	2.3426	19 58 26.9	11.629
7	6 42 14.58	2.4521	26 27 20.6	4.652	7	8 37 42.18	2.3394	19 46 45.3	11.757
8	6 44 41.69	2.4513	26 22 36.6	4.813	8	8 40 2.45	2.3362	19 34 56.0	11.884
9	6 47 8.74	2.4503	26 17 43.0	4.974	9	8 42 22.53	2.3331	19 22 59.2	12.009
10	6 49 35.73	2.4494	26 12 39.7	5.136	10	8 44 42.42	2.3299	19 10 54.9	12.133
11	6 52 2.67	2.4484	26 7 26.7	5.297	11	8 47 2.12	2.3268	18 58 43.2	12.257
12	6 54 29.54	2.4472	26 2 4.0	5.458	12	8 49 21.63	2.3237	18 46 24.1	12.378
13	6 56 56.34	2.4459	25 56 31.7	5.618	13	8 51 40.96	2.3206	18 33 57.8	12.498
14	6 59 23.05	2.4445	25 50 49.8	5.777	14	8 54 0.10	2.3174	18 21 24.3	12.618
15	7 1 49.68	2.4431	25 44 58.4	5.937	15	8 56 19.05	2.3143	18 8 43.6	12.737
16	7 4 16.22	2.4416	25 38 57.4	6.096	16	8 58 37.82	2.3112	17 55 55.9	12.853
17	7 6 42.67	2.4400	25 32 46.9	6.254	17	9 0 56.40	2.3082	17 43 1.2	12.969
18	7 9 9.02	2.4383	25 26 26.9	6.412	18	9 3 14.80	2.3051	17 29 59.6	13.083
19	7 11 35.27	2.4366	25 19 57.4	6.570	19	9 5 33.01	2.3021	17 16 51.3	13.195
20	7 14 1.41	2.4348	25 13 18.5	6.727	20	9 7 51.05	2.2992	17 3 36.2	13.307
21	7 16 27.44	2.4329	25 6 30.1	6.884	21	9 10 8.91	2.2962	16 50 14.4	13.418
22	7 18 53.36	2.4309	24 59 32.4	7.040	22	9 12 26.59	2.2932	16 36 46.0	13.527
23	7 21 19.15	2.4288	N.24 52 25.3	7.196	23	9 14 44.10	2.2903	N.16 23 11.1	13.636
	WEDNESDAY 10.					FRIDAY 12.			
0	7 23 44.82	2.4267	N.24 45 8.9	7.351	0	9 17 1.43	2.2873	N.16 9 29.7	13.743
1	7 26 10.36	2.4246	24 37 43.2	7.505	1	9 19 18.58	2.2845	15 55 42.0	13.848
2	7 28 35.77	2.4223	24 30 8.3	7.658	2	9 21 35.57	2.2817	15 41 48.0	13.952
3	7 31 1.04	2.4200	24 22 24.2	7.812	3	9 23 52.39	2.2789	15 27 47.8	14.054
4	7 33 26.17	2.4177	24 14 30.9	7.964	4	9 26 9.04	2.2762	15 13 41.5	14.155
5	7 35 51.16	2.4153	24 6 28.5	8.115	5	9 28 25.53	2.2735	14 59 29.2	14.255
6	7 38 16.00	2.4128	23 58 17.1	8.266	6	9 30 41.86	2.2708	14 45 10.9	14.353
7	7 40 40.69	2.4103	23 49 56.6	8.417	7	9 32 58.03	2.2682	14 30 46.8	14.450
8	7 43 5.23	2.4078	23 41 27.1	8.566	8	9 35 14.04	2.2655	14 16 16.9	14.546
9	7 45 29.62	2.4052	23 32 48.7	8.714	9	9 37 29.89	2.2629	14 1 41.3	14.640
10	7 47 53.85	2.4024	23 24 1.4	8.862	10	9 39 45.59	2.2605	13 47 0.1	14.732
11	7 50 17.91	2.3996	23 15 5.2	9.010	11	9 42 1.15	2.2561	13 32 13.4	14.823
12	7 52 41.80	2.3968	23 6 0.2	9.157	12	9 44 16.56	2.5557	13 17 21.3	14.913
13	7 55 5.53	2.3941	22 56 46.4	9.302	13	9 46 31.83	2.2533	13 2 23.8	15.002
14	7 57 29.09	2.3913	22 47 24.0	9.446	14	9 48 46.96	2.2509	12 47 21.1	15.088
15	7 59 52.48	2.3884	22 37 52.9	9.590	15	9 51 1.94	2.2486	12 32 13.2	15.174
16	8 2 15.70	2.3855	22 28 13.2	9.732	16	9 53 16.79	2.2465	12 17 0.2	15.258
17	8 4 38.74	2.3826	22 18 25.0	9.874	17	9 55 31.52	2.2444	12 1 42.2	15.340
18	8 7 1.61	2.3797	22 8 28.3	10.015	18	9 57 46.12	2.2423	11 46 19.4	15.420
19	8 9 24.30	2.3767	21 58 23.2	10.155	19	10 0 0.59	2.2402	11 30 51.8	15.500
20	8 11 46.81	2.3736	21 48 9.7	10.295	20	10 2 14.94	2.2382	11 15 19.4	15.578
21	8 14 9.13	2.3705	21 37 47.8	10.433	21	10 4 29.18	2.2363	10 59 42.4	15.654
22	8 16 31.27	2.3675	21 27 17.7	10.570	22	10 6 43.30	2.2344	10 44 0.9	15.728
23	8 18 53.23	2.3645	21 16 39.4	10.707	23	10 8 57.31	2.2326	10 28 15.0	15.802
24	8 21 15.01	2.3614	N.21 5 52.9	10.842	24	10 11 11.21	2.2308	N.10 12 24.7	15.873

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 13.					**MONDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 11 11.21	2.2308	N.10 12 24.7	15.873	0	11 57 34.62	2.2308	S. 3 19 41.4	17.274
1	10 13 25.01	2.2292	9 56 30.2	15.943	1	11 59 48.52	2.2327	3 36 57.4	17.258
2	10 15 38.71	2.2276	9 40 31.6	16.011	2	12 2 2.54	2.2346	3 54 12.4	17.240
3	10 17 52.32	2.2260	9 24 28.9	16.078	3	12 4 16.67	2.2365	4 11 26.2	17.219
4	10 20 5.83	2.2245	9 8 22.2	16.143	4	12 6 30.92	2.2387	4 28 38.7	17.197
5	10 22 19.26	2.2231	8 52 11.7	16.207	5	12 8 45.31	2.2409	4 45 49.8	17.173
6	10 24 32.60	2.2217	8 35 57.4	16.268	6	12 10 59.83	2.2431	5 2 59.5	17.147
7	10 26 45.86	2.2204	8 19 39.5	16.328	7	12 13 14.48	2.2453	5 20 7.5	17.119
8	10 28 59.05	2.2191	8 3 18.0	16.387	8	12 15 29.27	2.2477	5 37 13.8	17.089
9	10 31 12.16	2.2179	7 46 53.0	16.444	9	12 17 44.20	2.2501	5 54 18.2	17.057
10	10 33 25.20	2.2169	7 30 24.7	16.499	10	12 19 59.28	2.2527	6 11 20.6	17.023
11	10 35 38.19	2.2160	7 13 53.1	16.552	11	12 22 14.52	2.2552	6 28 20.9	16.987
12	10 37 51.12	2.2150	6 57 18.4	16.604	12	12 24 29.91	2.2578	6 45 19.0	16.948
13	10 40 3.99	2.2141	6 40 40.6	16.654	13	12 26 45.46	2.2606	7 2 14.7	16.908
14	10 42 16.81	2.2133	6 23 59.9	16.702	14	12 29 1.18	2.2633	7 19 8.0	16.867
15	10 44 29.58	2.2125	6 7 16.3	16.749	15	12 31 17.06	2.2662	7 35 58.7	16.823
16	10 46 42.31	2.2118	5 50 30.0	16.794	16	12 33 33.12	2.2692	7 52 46.7	16.776
17	10 48 55.00	2.2112	5 33 41.0	16.838	17	12 35 49.36	2.2721	8 9 31.8	16.727
18	10 51 7.66	2.2107	5 16 49.4	16.880	18	12 38 5.77	2.2750	8 26 14.0	16.677
19	10 53 20.29	2.2103	4 59 55.4	16.919	19	12 40 22.36	2.2782	8 42 53.1	16.625
20	10 55 32.90	2.2099	4 42 59.1	16.957	20	12 42 39.15	2.2814	8 59 29.0	16.572
21	10 57 45.48	2.2096	4 26 0.6	16.993	21	12 44 56.13	2.2846	9 16 1.7	16.516
22	10 59 58.05	2.2094	4 9 0.0	17.028	22	12 47 13.30	2.2878	9 32 30.9	16.458
23	11 2 10.61	2.2093	N. 3 51 57.3	17.061	23	12 49 30.67	2.2912	S. 9 48 56.6	16.398
	SUNDAY 14.					**TUESDAY 16.**			
0	11 4 23.17	2.2092	N. 3 34 52.7	17.092	0	12 51 48.25	2.2947	S.10 5 18.6	16.335
1	11 6 35.72	2.2092	3 17 46.3	17.120	1	12 54 6.03	2.2981	10 21 36.8	16.271
2	11 8 48.28	2.2093	3 0 38.3	17.147	2	12 56 24.02	2.3015	10 37 51.1	16.205
3	11 11 0.84	2.2094	2 43 28.7	17.173	3	12 58 42.21	2.3050	10 54 1.4	16.137
4	11 13 13.41	2.2097	2 26 17.6	17.197	4	13 1 0.62	2.3087	11 10 7.5	16.066
5	11 15 26.00	2.2101	2 9 5.1	17.218	5	13 3 19.25	2.3124	11 26 9.3	15.994
6	11 17 38.62	2.2105	1 51 51.4	17.238	6	13 5 38.11	2.3161	11 42 6.8	15.920
7	11 19 51.26	2.2109	1 34 36.5	17.257	7	13 7 57.19	2.3198	11 57 59.7	15.843
8	11 22 3.93	2.2114	1 17 20.6	17.272	8	13 10 16.49	2.3236	12 13 48.0	15.766
9	11 24 16.63	2.2121	1 0 3.8	17.287	9	13 12 36.02	2.3274	12 29 31.6	15.686
10	11 26 29.38	2.2128	0 42 46.2	17.299	10	13 14 55.78	2.3313	12 45 10.3	15.603
11	11 28 42.17	2.2136	0 25 27.9	17.310	11	13 17 15.78	2.3352	13 0 44.0	15.520
12	11 30 55.01	2.2144	N. 0 8 9.0	17.319	12	13 19 36.01	2.3392	13 16 12.7	15.434
13	11 33 7.90	2.2153	S. 0 9 10.4	17.326	13	13 21 56.48	2.3432	13 31 36.1	15.346
14	11 35 20.85	2.2164	0 26 30.1	17.330	14	13 24 17.19	2.3472	13 46 54.2	15.256
15	11 37 33.87	2.2175	0 43 50.0	17.333	15	13 26 38.15	2.3513	14 2 6.8	15.163
16	11 39 46.95	2.2187	1 1 10.1	17.335	16	13 28 59.35	2.3553	14 17 13.8	15.070
17	11 42 0.11	2.2199	1 18 30.2	17.334	17	13 31 20.79	2.3594	14 32 15.2	14.975
18	11 44 13.34	2.2212	1 35 50.2	17.332	18	13 33 42.48	2.3636	14 47 10.8	14.877
19	11 46 26.65	2.2226	1 53 10.0	17.327	19	13 36 4.42	2.3678	15 2 0.5	14.778
20	11 48 40.05	2.2242	2 10 29.4	17.320	20	13 38 26.61	2.3720	15 16 44.2	14.677
21	11 50 53.55	2.2257	2 27 48.4	17.312	21	13 40 49.06	2.3762	15 31 21.7	14.573
22	11 53 7.14	2.2273	2 45 6.8	17.301	22	13 43 11.76	2.3804	15 45 53.0	14.468
23	11 55 20.83	2.2290	3 2 24.5	17.288	23	13 45 34.71	2.3846	16 0 17.9	14.361
24	11 57 34.62	2.2308	S. 3 19 41.4	17.274	24	13 47 57.91	2.3888	S.16 14 36.3	14.252

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 17.					FRIDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 47 57.91	2.3888	S.16 14 36.3	14.252	0	15 47 11.67	2.5591	S.25 2 21.3	7.215
1	13 50 21.37	2.3932	16 28 48.1	14.142	1	15 49 45.27	2.5608	25 9 29.0	7.042
2	13 52 45.09	2.3975	16 42 53.3	14.030	2	15 52 18.97	2.5625	25 16 26.3	6.868
3	13 55 9.07	2.4017	16 56 51.7	13.916	3	15 54 52.77	2.5640	25 23 13.1	6.692
4	13 57 33.30	2.4060	17 10 43.2	13.799	4	15 57 26.65	2.5653	25 29 49.3	6.516
5	13 59 57.79	2.4103	17 24 27.6	13.681	5	16 0 0.61	2.5666	25 36 15.0	6.340
6	14 2 22.54	2.4147	17 38 4.9	13.562	6	16 2 34.64	2.5677	25 42 30.1	6.163
7	14 4 47.55	2.4189	17 51 35.0	13.440	7	16 5 8.74	2.5687	25 48 34.6	5.986
8	14 7 12.81	2.4232	18 4 57.7	13.317	8	16 7 42.89	2.5696	25 54 28.4	5.808
9	14 9 38.33	2.4275	18 18 13.0	13.192	9	16 10 17.09	2.5703	26 0 11.5	5.630
10	14 12 4.11	2.4317	18 31 20.8	13.066	10	16 12 51.33	2.5710	26 5 44.0	5.452
11	14 14 30.14	2.4359	18 44 20.9	12.937	11	16 15 25.61	2.5715	26 11 5.7	5.273
12	14 16 56.42	2.4402	18 57 13.2	12.806	12	16 17 59.91	2.5718	26 16 16.7	5.094
13	14 19 22.96	2.4444	19 9 57.6	12.675	13	16 20 34.23	2.5721	26 21 17.0	4.915
14	14 21 49.75	2.4487	19 22 34.2	12.543	14	16 23 8.56	2.5722	26 26 6.5	4.735
15	14 24 16.80	2.4529	19 35 2.8	12.409	15	16 25 42.89	2.5722	26 30 45.2	4.556
16	14 26 44.10	2.4570	19 47 23.3	12.272	16	16 28 17.22	2.5720	26 35 13.2	4.377
17	14 29 11.64	2.4611	19 59 35.5	12.133	17	16 30 51.53	2.5717	26 39 30.4	4.197
18	14 31 39.43	2.4652	20 11 39.3	11.993	18	16 33 25.82	2.5713	26 43 36.8	4.017
19	14 34 7.46	2.4693	20 23 34.7	11.853	19	16 36 0.08	2.5707	26 47 32.4	3.837
20	14 36 35.74	2.4733	20 35 21.7	11.712	20	16 38 34.30	2.5698	26 51 17.3	3.658
21	14 39 4.26	2.4772	20 47 0.1	11.568	21	16 41 8.46	2.5689	26 54 51.4	3.478
22	14 41 33.01	2.4812	20 58 29.8	11.422	22	16 43 42.57	2.5680	26 58 14.7	3.298
23	14 44 2.00	2.4851	S.21 9 50.7	11.274	23	16 46 16.62	2.5669	S.27 1 27.2	3.119
	THURSDAY 18.					SATURDAY 20.			
0	14 46 31.22	2.4889	S.21 21 2.7	11.126	0	16 48 50.60	2.5657	S.27 4 29.0	2.941
1	14 49 0.67	2.4927	21 32 5.8	10.977	1	16 51 24.50	2.5642	27 7 20.1	2.763
2	14 51 30.34	2.4964	21 42 59.9	10.826	2	16 53 58.31	2.5626	27 10 0.4	2.583
3	14 54 0.24	2.5002	21 53 44.9	10.673	3	16 56 32.01	2.5609	27 12 30.0	2.404
4	14 56 30.36	2.5038	22 4 20.7	10.519	4	16 59 5.61	2.5591	27 14 48.9	2.226
5	14 59 0.69	2.5073	22 14 47.2	10.364	5	17 1 39.10	2.5572	27 16 57.1	2.048
6	15 1 31.23	2.5108	22 25 4.4	10.208	6	17 4 12.47	2.5551	27 18 54.7	1.871
7	15 4 1.98	2.5142	22 35 12.2	10.051	7	17 6 45.71	2.5528	27 20 41.6	1.694
8	15 6 32.93	2.5175	22 45 10.5	9.892	8	17 9 18.81	2.5504	27 22 18.0	1.518
9	15 9 4.08	2.5208	22 54 59.2	9.732	9	17 11 51.76	2.5478	27 23 43.8	1.342
10	15 11 35.43	2.5240	23 4 38.3	9.571	10	17 14 24.55	2.5452	27 24 59.0	1.166
11	15 14 6.96	2.5270	23 14 7.7	9.409	11	17 16 57.19	2.5426	27 26 3.7	0.992
12	15 16 38.67	2.5300	23 23 27.4	9.247	12	17 19 29.66	2.5397	27 26 58.0	0.817
13	15 19 10.56	2.5330	23 32 37.3	9.082	13	17 22 1.95	2.5366	27 27 41.8	0.643
14	15 21 42.63	2.5359	23 41 37.2	8.916	14	17 24 34.05	2.5333	27 28 15.2	0.470
15	15 24 14.87	2.5387	23 50 27.2	8.750	15	17 27 5.95	2.5300	27 28 38.2	0.298
16	15 26 47.27	2.5414	23 59 7.2	8.583	16	17 29 37.65	2.5267	27 28 50.9	−0.126
17	15 29 19.83	2.5440	24 7 37.2	8.416	17	17 32 9.15	2.5232	27 28 53.3	+0.046
18	15 31 52.55	2.5465	24 15 57.1	8.247	18	17 34 40.43	2.5194	27 28 45.4	0.217
19	15 34 25.41	2.5488	24 24 6.8	8.077	19	17 37 11.48	2.5156	27 28 27.3	0.386
20	15 36 58.41	2.5511	24 32 6.3	7.907	20	17 39 42.30	2.5117	27 27 59.1	0.554
21	15 39 31.54	2.5532	24 39 55.6	7.736	21	17 42 12.89	2.5077	27 27 20.8	0.722
22	15 42 4.80	2.5553	24 47 34.6	7.563	22	17 44 43.23	2.5036	27 26 32.4	0.890
23	15 44 38.18	2.5572	24 55 3.2	7.389	23	17 47 13.32	2.4992	27 25 34.0	1.057
24	15 47 11.67	2.5591	S.25 2 21.3	7.215	24	17 49 43.14	2.4948	S.27 24 25.6	1.222

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 49 43.14	2.4948	S.27 24 25.6	1.222
1	17 52 12.70	2.4904	27 23 7.3	1.387
2	17 54 41.99	2.4858	27 21 39.2	1.550
3	17 57 11.00	2.4811	27 20 1.3	1.712
4	17 59 39.72	2.4763	27 18 13.7	1.874
5	18 2 8.16	2.4715	27 16 16.4	2.035
6	18 4 36.30	2.4664	27 14 9.5	2.195
7	18 7 4.13	2.4613	27 11 53.0	2.354
8	18 9 31.66	2.4561	27 9 27.0	2.511
9	18 11 58.87	2.4508	27 6 51.7	2.667
10	18 14 25.76	2.4455	27 4 7.0	2.823
11	18 16 52.33	2.4401	27 1 12.9	2.978
12	18 19 18.57	2.4345	26 58 9.6	3.132
13	18 21 44.47	2.4288	26 54 57.1	3.283
14	18 24 10.03	2.4232	26 51 35.6	3.433
15	18 26 35.25	2.4174	26 48 5.1	3.583
16	18 29 0.12	2.4115	26 44 25.7	3.732
17	18 31 24.63	2.4056	26 40 37.3	3.880
18	18 33 48.79	2.3997	26 36 40.1	4.027
19	18 36 12.59	2.3936	26 32 34.1	4.172
20	18 38 36.02	2.3874	26 28 19.5	4.315
21	18 40 59.08	2.3812	26 23 56.3	4.457
22	18 43 21.77	2.3750	26 19 24.6	4.599
23	18 45 44.08	2.3687	S.26 14 44.4	4.740

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 48 6.01	2.3623	S.26 9 55.8	4.879
1	18 50 27.56	2.3559	26 4 58.9	5.017
2	18 52 48.72	2.3495	25 59 53.8	5.153
3	18 55 9.50	2.3431	25 54 40.6	5.288
4	18 57 29.89	2.3365	25 49 19.3	5.422
5	18 59 49.88	2.3298	25 43 50.0	5.555
6	19 2 9.47	2.3232	25 38 12.7	5.687
7	19 4 28.67	2.3167	25 32 27.6	5.817
8	19 6 47.47	2.3100	25 26 34.7	5.946
9	19 9 5.87	2.3033	25 20 34.1	6.073
10	19 11 23.87	2.2966	25 14 25.9	6.199
11	19 13 41.46	2.2898	25 8 10.2	6.324
12	19 15 58.65	2.2831	25 1 47.0	6.448
13	19 18 15.43	2.2763	24 55 16.4	6.571
14	19 20 31.80	2.2695	24 48 38.5	6.692
15	19 22 47.77	2.2627	24 41 53.4	6.812
16	19 25 3.33	2.2559	24 35 1.1	6.931
17	19 27 18.48	2.2490	24 28 1.7	7.048
18	19 29 33.21	2.2421	24 20 55.4	7.163
19	19 31 47.53	2.2353	24 13 42.2	7.278
20	18 34 1.44	2.2285	24 6 22.1	7.392
21	19 36 14.95	2.2217	23 58 55.2	7.504
22	19 38 28.05	2.2148	23 51 21.6	7.615
23	19 40 40.73	2.2079	23 43 41.4	7.723
24	19 42 53.00	2.2011	S.23 35 54.8	7.831

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 42 53.00	2.2011	S.23 35 54.8	7.831
1	19 45 4.86	2.1943	23 28 1.7	7.938
2	19 47 16.31	2.1875	23 20 2.2	8.045
3	19 49 27.36	2.1807	23 11 56.3	8.150
4	19 51 38.00	2.1739	23 3 44.2	8.253
5	19 53 48.23	2.1671	22 55 26.0	8.355
6	19 55 58.05	2.1603	22 47 1.6	8.457
7	19 58 7.47	2.1536	22 38 31.2	8.556
8	20 0 16.49	2.1469	22 29 54.9	8.653
9	20 2 25.10	2.1402	22 21 12.8	8.750
10	20 4 33.31	2.1336	22 12 24.9	8.847
11	20 6 41.13	2.1270	22 3 31.2	8.942
12	20 8 48.55	2.1203	21 54 31.9	9.035
13	20 10 55.57	2.1137	21 45 27.0	9.127
14	20 13 2.20	2.1072	21 36 16.6	9.218
15	20 15 8.44	2.1007	21 27 0.8	9.308
16	20 17 14.29	2.0942	21 17 39.7	9.397
17	20 19 19.75	2.0877	21 8 13.2	9.485
18	20 21 24.82	2.0813	20 58 41.5	9.571
19	20 23 29.51	2.0750	20 49 4.7	9.656
20	20 25 33.82	2.0687	20 39 22.8	9.741
21	20 27 37.75	2.0624	20 29 35.8	9.824
22	20 29 41.31	2.0562	20 19 43.9	9.906
23	20 31 44.49	2.0499	S.20 9 47.1	9.986

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 33 47.30	2.0438	S.19 59 45.6	10.065
1	20 35 49.75	2.0377	19 49 39.3	10.144
2	20 37 51.83	2.0317	19 39 28.3	10.222
3	20 39 53.55	2.0257	19 29 12.7	10.298
4	20 41 54.91	2.0197	19 18 52.5	10.374
5	20 43 55.92	2.0138	19 8 27.8	10.448
6	20 45 56.57	2.0079	18 57 58.7	10.521
7	20 47 56.87	2.0022	18 47 25.3	10.593
8	20 49 56.83	1.9964	18 36 47.5	10.665
9	20 51 56.44	1.9907	18 26 5.5	10.735
10	20 53 55.71	1.9851	18 15 19.3	10.804
11	20 55 54.65	1.9795	18 4 29.0	10.872
12	20 57 53.25	1.9739	17 53 34.7	10.938
13	20 59 51.52	1.9685	17 42 36.4	11.004
14	21 1 49.47	1.9632	17 31 34.2	11.070
15	21 3 47.10	1.9578	17 20 28.0	11.135
16	21 5 44.41	1.9525	17 9 18.0	11.198
17	21 7 41.40	1.9472	16 58 4.3	11.259
18	21 9 38.07	1.9420	16 46 46.9	11.320
19	21 11 34.44	1.9370	16 35 25.9	11.380
20	21 13 30.51	1.9319	16 24 1.3	11.440
21	21 15 26.27	1.9269	16 12 33.1	11.499
22	21 17 21.74	1.9220	16 1 1.4	11.556
23	21 19 16.91	1.9171	15 49 26.4	11.612
24	21 21 11.79	1.9123	S.15 37 48.0	11.668

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	21	21	11.79	1.9123	S.	15	37	48.0	11.668
1	21	23	6.38	1.9076		15	26	6.3	11.723
2	21	25	0.70	1.9030		15	14	21.3	11.776
3	21	26	54.74	1.8983		15	2	33.2	11.828
4	21	28	48.50	1.8938		14	50	41.9	11.881
5	21	30	42.00	1.8894		14	38	47.5	11.932
6	21	32	35.23	1.8850		14	26	50.1	11.982
7	21	34	28.20	1.8807		14	14	49.7	12.031
8	21	36	20.91	1.8764		14	2	46.4	12.080
9	21	38	13.36	1.8722		13	50	40.1	12.128
10	21	40	5.57	1.8681		13	38	31.0	12.175
11	21	41	57.53	1.8640		13	26	19.1	12.221
12	21	43	49.25	1.8600		13	14	4.5	12.266
13	21	45	40.73	1.8561		13	1	47.2	12.310
14	21	47	31.98	1.8522		12	49	27.3	12.353
15	21	49	23.00	1.8484		12	37	4.8	12.396
16	21	51	13.79	1.8447		12	24	39.7	12.438
17	21	53	4.36	1.8411		12	12	12.2	12.479
18	21	54	54.72	1.8375		11	59	42.2	12.520
19	21	56	44.86	1.8339		11	47	9.8	12.559
20	21	58	34.79	1.8305		11	34	35.1	12.598
21	22	0	24.52	1.8272		11	21	58.1	12.636
22	22	2	14.05	1.8239		11	9	18.8	12.673
23	22	4	3.39	1.8207	S.	10	56	37.3	12.710

FRIDAY 26.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
0	22	5	52.53	1.8174	S.	10	43	53.6	12.746
1	22	7	41.48	1.6143		10	31	7.8	12.781
2	22	9	30.25	1.8114		10	18	19.9	12.815
3	22	11	18.85	1.8086		10	5	30.0	12.848
4	22	13	7.28	1.8057		9	52	38.1	12.881
5	22	14	55.53	1.8028		9	39	44.3	12.913
6	22	16	43.61	1.8000		9	26	48.5	12.945
7	22	18	31.53	1.7974		9	13	50.9	12.975
8	22	20	19.30	1.7948		9	0	51.5	13.005
9	22	22	6.91	1.7922		8	47	50.3	13.034
10	22	23	54.37	1.7898		8	34	47.4	13.063
11	22	25	41.69	1.7875		8	21	42.8	13.091
12	22	27	28.87	1.7852		8	8	36.5	13.118
13	22	29	15.91	1.7829		7	55	28.6	13.144
14	22	31	2.82	1.7808		7	42	19.2	13.168
15	22	32	49.61	1.7787		7	29	8.4	13.193
16	22	34	36.27	1.7767		7	15	56.1	13.218
17	22	36	22.81	1.7747		7	2	42.3	13.243
18	22	38	9.23	1.7728		6	49	27.0	13.266
19	22	39	55.54	1.7710		6	36	10.4	13.287
20	22	41	41.75	1.7693		6	22	52.6	13.308
21	22	43	27.86	1.7677		6	9	33.5	13.328
22	22	45	13.87	1.7660		5	56	13.2	13.348
23	22	46	59.78	1.7644		5	42	51.7	13.368
24	22	48	45.60	1.7630	S.	5	29	29.0	13.387

SATURDAY 27.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
	h	m	s	s		°	′	″	″
0	22	48	45.60	1.7630	S.	5	29	29.0	13.387
1	22	50	31.34	1.7617		5	16	5.2	13.405
2	22	52	17.00	1.7603		5	2	40.4	13.422
3	22	54	2.58	1.7591		4	49	14.6	13.438
4	22	55	48.09	1.7579		4	35	47.8	13.455
5	22	57	33.53	1.7568		4	22	20.0	13.471
6	22	59	18.91	1.7558		4	8	51.3	13.485
7	23	1	4.23	1.7549		3	55	21.8	13.498
8	23	2	49.50	1.7541		3	41	51.5	13.512
9	23	4	34.72	1.7532		3	28	20.3	13.526
10	23	6	19.89	1.7524		3	14	48.4	13.538
11	23	8	5.01	1.7517		3	1	15.8	13.548
12	23	9	50.09	1.7511		2	47	42.6	13.558
13	23	11	35.14	1.7507		2	34	8.8	13.568
14	23	13	20.17	1.7503		2	20	34.4	13.578
15	23	15	5.17	1.7498		2	6	59.4	13.587
16	23	16	50.14	1.7494		1	53	23.9	13.595
17	23	18	35.10	1.7492		1	39	48.0	13.602
18	23	20	20.05	1.7491		1	26	11.7	13.608
19	23	22	4.99	1.7490		1	12	35.0	13.614
20	23	23	49.93	1.7489		0	58	58.0	13.620
21	23	25	34.86	1.7489		0	45	20.6	13.625
22	23	27	19.80	1.7491		0	31	43.0	13.628
23	23	29	4.75	1.7493	S.	0	18	5.2	13.631

SUNDAY 28.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.				Diff. for 1 m.
0	23	30	49.71	1.7495	S.	0	4	27.3	13.633
1	23	32	34.69	1.7498	N.	0	9	10.8	13.636
2	23	34	19.69	1.7502		0	22	49.0	13.638
3	23	36	4.71	1.7506		0	36	27.3	13.638
4	23	37	49.76	1.7512		0	50	5.6	13.637
5	23	39	34.85	1.7518		1	3	43.8	13.636
6	23	41	19.98	1.7525		1	17	21.9	13.934
7	23	43	5.15	1.7532		1	30	59.9	13.632
8	23	44	50.36	1.7539		1	44	37.8	13.630
9	23	46	35.62	1.7548		1	58	15.5	13.626
10	23	48	20.94	1.7558		2	11	52.9	13.622
11	23	50	6.32	1.7568		2	25	30.1	13.618
12	23	51	51.75	1.7578		2	39	7.0	13.612
13	23	53	37.25	1.7590		2	52	43.5	13.604
14	23	55	22.83	1.7602		3	6	19.5	13.597
15	23	57	8.48	1.7615		3	19	55.1	13.589
16	23	58	54.21	1.7628		3	33	30.2	13.581
17	0	0	40.02	1.7642		3	47	4.8	13.572
18	0	2	25.92	1.7657		4	0	38.8	13.562
19	0	4	11.91	1.7673		4	14	12.2	13.551
20	0	5	58.00	1.7689		4	27	44.9	13.539
21	0	7	44.18	1.7706		4	41	16.9	13.527
22	0	9	30.47	1.7724		4	54	48.1	13.513
23	0	11	16.87	1.7742		5	8	18.5	13.500
24	0	13	3.38	1.7761	N.	5	21	48.1	13.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 29.					TUESDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 13 3.38	1.7761	N. 5 21 48.1	13.486	0	0 56 23.48	1.8414	N.10 39 20.8	12.898
1	0 14 50.00	1.7780	5 35 16.8	13.470	1	0 58 14.07	1.8449	10 52 13.7	12.863
2	0 16 36.74	1.7801	5 48 44.5	13.454	2	1 0 4.87	1.8485	11 5 4.4	12.827
3	0 18 23.61	1.7822	6 2 11.3	13.437	3	1 1 55.89	1.8522	11 17 52.9	12.790
4	0 20 10.61	1.7844	6 15 37.0	13.419	4	1 3 47.13	1.8559	11 30 39.2	12.752
5	0 21 57.74	1.7866	6 29 1.6	13.401	5	1 5 38.60	1.8597	11 43 23.2	12.713
6	0 23 45.00	1.7888	6 42 25.1	13.382	6	1 7 30.29	1.8634	11 56 4.8	12.673
7	0 25 32.40	1.7912	6 55 47.5	13.362	7	1 9 22.21	1.8673	12 8 44.0	12.633
8	0 27 19.95	1.7937	7 9 8.6	13.341	8	1 11 14.37	1.8712	12 21 20.8	12.592
9	0 29 7.65	1.7962	7 22 28.4	13.319	9	1 13 6.76	1.8752	12 33 55.1	12.550
10	0 30 55.50	1.7987	7 35 46.9	13.297	10	1 14 59.40	1.8793	12 46 26.8	12.507
11	0 32 43.50	1.8013	7 49 4.1	13.275	11	1 16 52.28	1.8834	12 58 55.9	12.462
12	0 34 31.66	1.8041	8 2 19.9	13.252	12	1 18 45.41	1.8876	13 11 22.3	12.417
13	0 36 19.99	1.8069	8 15 34.3	13.227	13	1 20 38.79	1.8918	13 23 45.9	12.371
14	0 38 8.49	1.8097	8 28 47.1	13.200	14	1 22 32.43	1.8962	13 36 6.8	12.324
15	0 39 57.15	1.8125	8 41 58.3	13.173	15	1 24 26.33	1.9005	13 48 24.8	12.276
16	0 41 45.99	1.8155	8 55 7.9	13.146	16	1 26 20.49	1.9048	14 0 39.9	12.227
17	0 43 35.01	1.8185	9 8 15.8	13.118	17	1 28 14.91	1.9092	14 12 52.0	12.177
18	0 45 24.21	1.8216	9 21 22.1	13.090	18	1 30 9.60	1.9137	14 25 1.1	12.126
19	0 47 13.60	1.8247	9 34 26.6	13.060	19	1 32 4.56	1.9183	14 37 7.1	12.074
20	0 49 3.18	1.8279	9 47 29.3	13.029	20	1 33 59.80	1.9230	14 49 10.0	12.021
21	0 50 52.95	1.8312	10 0 30.1	12.997	21	1 35 55.32	1.9277	15 1 9.6	11.966
22	0 52 42.92	1.8346	10 13 29.0	12.965	22	1 37 51.12	1.9323	15 13 5.9	11.911
23	0 54 33.10	1.8380	10 26 25.9	12.932	23	1 39 47.20	1.9370	15 24 58.9	11.856
24	0 56 23.48	1.8414	N.10 39 20.8	12.898	24	1 41 43.56	1.9418	N.15 36 48.6	11.799

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	2	9	14.3
☽ First Quarter, ...	10	2	54.9
○ Full Moon, ...	16	17	57.3
☾ Last Quarter, ...	23	20	33.2

	d	h
☾ Perigee, ...	15	10.3
☾ Apogee, ...	27	15 1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
4	Sun	W.	18° 30′ 19″	3430	19° 52′ 2″	3411	21° 14′ 6″	3394	22° 36′ 29″	3379
	Mars	E.	37 36 59	3217	36 11 10	3212	34 45 15	3208	33 19 15	3203
	Pollux	E.	78 36 30	2973	77 5 44	2968	75 34 51	2962	74 3 50	2955
5	Sun	W.	29 32 26	3315	30 56 20	3301	32 20 27	3294	33 44 46	3282
	Mars	E.	26 7 58	3184	24 41 30	3182	23 14 59	3180	21 48 26	3180
	Pollux	E.	66 26 46	2924	64 54 57	2916	63 22 59	2909	61 50 52	2902
	Regulus	E.	103 20 1	2910	101 47 55	2903	100 15 40	2895	98 43 15	2888
6	Sun	W.	40 49 29	3230	42 15 3	3220	43 40 49	3209	45 6 48	3198
	Pollux	E.	54 7 59	2865	52 34 55	2857	51 1 41	2850	49 28 18	2842
	Regulus	E.	90 58 44	2848	89 25 19	2839	87 51 42	2831	86 17 54	2821
7	Sun	W.	52 19 59	3143	53 47 17	3130	55 14 50	3119	56 42 37	3107
	Pollux	E.	41 38 42	2801	40 4 15	2792	38 29 37	2784	36 54 48	2776
	Regulus	E.	78 25 54	2774	76 50 52	2764	75 15 37	2754	73 40 9	2743
8	Sun	W.	64 5 12	3045	65 34 29	3031	67 4 3	3018	68 33 53	3005
	Aldebaran	W.	17 26 2	3568	18 45 11	3421	20 7 4	3301	21 31 14	3204
	Pollux	E.	28 58 9	2740	27 22 22	2734	25 46 27	2729	24 10 26	2725
	Regulus	E.	65 39 10	2687	64 2 13	2676	62 25 1	2664	60 47 33	2652
9	Sun	W.	76 7 19	2935	77 38 53	2921	79 10 45	2906	80 42 56	2892
	Aldebaran	W.	28 56 5	2892	30 28 34	2850	32 1 57	2812	33 36 9	2778
	Mars	W.	22 33 57	2852	24 7 17	2832	25 41 3	2813	27 15 14	2795
	Regulus	E.	52 36 0	2588	50 56 49	2575	49 17 20	2561	47 37 32	2548
	Spica	E.	106 38 45	2591	104 59 38	2578	103 20 13	2564	101 40 29	2551
10	Sun	W.	88 28 35	2816	90 2 42	2801	91 37 8	2785	93 11 55	2770
	Aldebaran	W.	41 37 34	2636	43 15 40	2612	44 54 19	2589	46 33 29	2567
	Mars	W.	35 12 2	2707	36 48 32	2691	38 25 24	2675	40 2 38	2657
	Regulus	E.	39 13 51	2479	37 32 8	2465	35 50 6	2451	34 7 44	2437
	Spica	E.	93 17 3	2481	91 35 23	2467	89 53 23	2453	88 11 3	2438
11	Sun	W.	101 10 56	2692	102 47 46	2677	104 24 57	2662	106 2 28	2646
	Aldebaran	W.	54 56 40	2466	56 38 41	2447	58 21 9	2429	60 4 3	2411
	Mars	W.	48 14 22	2577	49 53 49	2561	51 33 38	2545	53 13 49	2529
	Regulus	E.	25 30 51	2366	23 46 27	2353	22 1 44	2339	20 16 41	2325
	Spica	E.	79 34 12	2365	77 49 47	2350	76 5 1	2337	74 19 55	2322
12	Sun	W.	114 15 10	2573	115 54 42	2559	117 34 34	2545	119 14 45	2531
	Aldebaran	W.	68 44 42	2328	70 30 0	2313	72 15 41	2298	74 1 44	2283
	Mars	W.	61 40 7	2453	63 22 26	2438	65 5 6	2424	66 48 6	2410
	Pollux	W.	25 53 9	2306	27 39 0	2285	29 25 21	2266	31 12 10	2249
	Spica	E.	65 29 11	2252	63 42 1	2239	61 54 31	2225	60 6 41	2212
	Antares	E.	111 19 54	2247	109 32 37	2233	107 44 59	2220	105 57 2	2207
13	Sun	W.	127 40 10	2470	129 22 5	2459	131 4 16	2449	132 46 41	2439
	Aldebaran	W.	82 57 5	2218	84 45 6	2206	86 33 25	2195	88 22 0	2184
	Mars	W.	75 27 57	2346	77 12 50	2334	78 58 0	2322	80 43 28	2311
	Pollux	W.	40 12 22	2173	42 1 30	2160	43 50 58	2148	45 40 44	2136
	Spica	E.	51 2 51	2153	49 13 12	2141	47 23 16	2131	45 33 4	2122
	Antares	E.	96 52 29	2146	95 2 40	2134	93 12 33	2124	91 22 10	2114

APRIL, 1878.

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
4	Sun	W.	23° 59′ 10″	3305	25° 22′ 7″	3351	26° 45′ 19″	3338	28° 8′ 46″	3327
	Mars	E.	31 53 9	3198	30 26 58	3195	29 0 43	3191	27 34 23	3187
	Pollux	E.	72 32 41	2949	71 1 24	2943	69 30 0	2936	67 58 27	2930
5	Sun	W.	35 9 18	3272	36 34 2	3261	37 58 59	3251	39 24 8	3241
	Mars	E.	20 21 53	3181	18 55 21	3185	17 28 54	3192	16 2 35	3204
	Pollux	E.	60 18 36	2895	58 46 11	2888	57 13 37	2880	55 40 53	2873
	Regulus	E.	97 10 41	2890	95 37 57	2873	94 5 3	2865	92 31 59	2856
6	Sun	W.	46 33 0	3187	47 59 25	3176	49 26 3	3165	50 52 54	3153
	Pollux	E.	47 54 44	2833	46 20 59	2825	44 47 4	2817	43 12 58	2809
	Regulus	E.	84 43 54	2813	83 9 43	2803	81 35 19	2794	80 0 43	2784
7	Sun	W.	58 10 38	3095	59 38 54	3083	61 7 24	3070	62 36 10	3057
	Pollux	E.	35 19 49	2768	33 44 39	2760	32 9 18	2753	30 33 48	2746
	Regulus	E.	72 4 26	2732	70 28 29	2722	68 52 18	2710	67 15 52	2698
8	Sun	W.	70 4 0	2991	71 34 24	2977	73 5 5	2964	74 36 3	2950
	Aldebaran	W.	22 57 19	3121	24 25 3	3052	25 54 12	2992	27 24 35	2939
	Pollux	E.	22 34 20	2724	20 58 12	2726	19 22 7	2731	17 46 8	2742
	Regulus	E.	59 9 48	2640	57 31 47	2627	55 53 29	2614	54 14 53	2601
9	Sun	W.	82 15 25	2877	83 48 13	2862	85 21 21	2847	86 54 48	2831
	Aldebaran	W.	35 11 6	2746	36 46 45	2715	38 23 5	2687	40 0 2	2661
	Mars	W.	28 49 49	2776	30 24 48	2759	32 0 10	2741	33 35 55	2725
	Regulus	E.	45 57 26	2535	44 17 1	2521	42 36 17	2507	40 55 14	2493
	Spica	E.	100 0 26	2537	98 20 4	2522	96 39 23	2510	94 58 23	2495
10	Sun	W.	94 47 2	2754	96 22 30	2739	97 58 18	2723	99 34 27	2708
	Aldebaran	W.	48 13 9	2545	49 53 19	2525	51 33 58	2504	53 15 5	2485
	Mars	W.	41 40 15	2641	43 18 14	2626	44 56 34	2609	46 35 17	2593
	Regulus	E.	32 25 2	2423	30 42 0	2408	28 58 37	2394	27 14 54	2380
	Spica	E.	86 28 22	2424	84 45 21	2409	83 1 59	2394	81 18 16	2380
11	Sun	W.	107 40 20	2632	109 18 32	2616	110 57 5	2601	112 35 58	2588
	Aldebaran	W.	61 47 22	2394	63 31 6	2377	65 15 14	2360	66 59 46	2344
	Mars	W.	54 54 22	2514	56 35 16	2498	58 16 32	2483	59 58 9	2468
	Regulus	E.	18 31 18	2312	16 45 36	2300	14 59 37	2289	13 13 22	2281
	Spica	E.	72 34 28	2308	70 48 40	2294	69 2 31	2279	67 16 1	2266
12	Sun	W.	120 55 15	2518	122 36 3	2506	124 17 8	2493	125 58 31	2482
	Aldebaran	W.	75 48 8	2270	77 34 52	2256	79 21 57	2242	81 9 22	2230
	Mars	W.	68 31 26	2397	70 15 5	2383	71 59 4	2370	73 43 22	2358
	Pollux	W.	32 59 25	2232	34 47 5	2216	36 35 8	2201	38 23 34	2186
	Spica	E.	58 18 32	2200	56 30 4	2188	54 41 18	2175	52 52 13	2164
	Antares	E.	104 8 45	2194	102 20 9	2182	100 31 14	2170	98 42 1	2157
13	Sun	W.	134 29 20	2430	136 12 12	2422	137 55 15	2415	139 38 29	2409
	Aldebaran	W.	90 10 52	2174	91 59 58	2165	93 49 19	2157	95 38 52	2148
	Mars	W.	82 29 12	2300	84 15 11	2291	86 1 24	2281	87 47 51	2272
	Pollux	W.	47 30 49	2124	49 21 11	2114	51 11 49	2104	53 2 42	2095
	Spica	E.	43 42 38	2112	41 51 57	2103	40 1 3	2095	38 9 56	2088
	Antares	E.	89 31 32	2103	87 40 38	2094	85 49 30	2085	83 58 8	2077

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P.L of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
14	Aldebaran	W.	97° 28′ 38″	2141	99° 18′ 34″	2134	101° 8′ 41″	2128	102° 58′ 57″	2124
	Mars	W.	89 34 31	2264	91 21 23	2256	93 8 27	2249	94 55 41	2243
	Pollux	W.	54 53 49	2086	56 45 10	2078	58 36 43	2071	60 28 27	2064
	Regulus	W.	17 51 58	2077	19 43 32	2069	21 35 19	2061	23 27 19	2054
	Spica	E.	36 18 38	2081	34 27 9	2074	32 35 30	2069	30 43 43	2064
	Antares	E.	82 6 34	2069	80 14 47	2062	78 22 49	2055	76 30 40	2049
15	Mars	W.	103 53 55	2221	105 41 51	2218	107 29 51	2217	109 17 53	2216
	Pollux	W.	69 49 24	2041	71 41 54	2038	73 34 29	2036	75 27 7	2035
	Regulus	W.	32 49 35	2030	34 42 22	2028	36 35 13	2026	38 28 7	2025
	Antares	E.	67 7 53	2028	65 15 2	2025	63 22 7	2024	61 29 10	2023
	α Aquilæ	E.	117 0 12	2892	115 27 43	2863	113 54 37	2838	112 20 58	2815
16	Pollux	W.	84 50 17	2041	86 42 48	2044	88 35 13	2048	90 27 32	2053
	Regulus	W.	47 52 38	2030	49 45 25	2034	51 38 6	2038	53 30 41	2042
	Antares	E.	52 4 24	2029	50 11 35	2033	48 18 52	2037	46 26 15	2041
	α Aquilæ	E	104 26 28	2741	102 50 43	2734	101 14 48	2729	99 38 47	2726
	Jupiter	E.	108 54 57	2063	107 3 1	2066	105 11 9	2070	103 19 23	2075
17	Pollux	W.	99 46 51	2088	101 38 8	2097	103 29 12	2107	105 20 1	2118
	Regulus	W.	62 51 24	2077	64 42 59	2086	66 34 20	2096	68 25 26	2105
	Antares	E.	37 5 23	2076	35 13 47	2085	33 22 24	2094	31 31 16	2105
	α Aquilæ	E.	91 38 36	2741	90 2 51	2750	88 27 18	2760	86 51 58	2773
	Jupiter	E.	94 2 47	2109	92 12 1	2118	90 21 29	2128	88 31 12	2137
18	Regulus	W.	77 36 47	2165	79 26 7	2178	81 15 7	2193	83 3 45	2207
	Spica	W.	23 39 18	2187	25 28 5	2198	27 16 36	2209	29 4 50	2222
	α Aquilæ	F.	79 0 13	2863	77 27 7	2887	75 54 31	2912	74 22 27	2939
	Jupiter	E.	79 23 54	2197	77 35 22	2210	75 47 10	2225	73 59 20	2239
19	Regulus	W.	92 1 20	2286	93 47 40	2303	95 33 35	2320	97 19 6	2337
	Spica	W.	38 0 56	2295	39 47 3	2311	41 32 46	2328	43 18 5	2344
	Jupiter	E.	65 5 43	2318	63 20 10	2335	61 35 2	2352	59 50 18	2370
	α Aquilæ	E.	66 51 33	3107	65 23 32	3147	63 56 19	3190	62 29 58	3236
	Fomalhaut	E.	90 5 6	2618	88 26 35	2635	86 48 27	2653	85 10 44	2672
	Venus	E.	103 43 20	2554	102 3 22	2572	100 23 49	2591	98 44 42	2610
	α Pegasi	E.	112 3 16	2501	110 22 4	2513	108 41 9	2526	107 0 32	2539
20	Regulus	W.	106 0 15	2426	107 43 12	2445	109 25 42	2464	111 7 46	2482
	Spica	W.	51 58 30	2432	53 41 19	2450	55 23 42	2468	57 5 40	2487
	Jupiter	E.	51 13 2	2460	49 30 52	2478	47 49 8	2497	46 7 50	2515
	α Aquilæ	E.	55 32 46	3512	54 12 35	3579	52 53 38	3650	51 35 58	3726
	Fomalhaut	E.	77 8 55	2780	75 34 1	2804	73 59 38	2828	72 25 47	2854
	Venus	E.	90 35 40	2708	88 59 11	2729	87 23 9	2749	85 47 34	2769
	α Pegasi	E.	98 42 21	2616	97 3 48	2633	95 25 38	2650	93 47 51	2668
	Saturn	E.	102 41 25	2486	100 59 52	2504	99 18 44	2522	97 38 2	2541
	Sun	E.	135 54 15	2776	134 19 16	2795	132 44 41	2813	131 10 30	2832
21	Spica	W.	65 29 4	2578	67 8 29	2596	68 47 30	2614	70 26 6	2632
	Antares	W.	19 35 45	2574	21 15 16	2592	22 54 22	2610	24 33 4	2628
	Jupiter	E.	37 47 46	2608	36 9 2	2626	34 30 42	2644	32 52 47	2662
	α Aquilæ	E.	45 29 22	4203	44 20 59	4323	43 14 28	4454	42 9 55	4596
	Fomalhaut	E.	64 45 2	2993	63 14 41	3025	61 44 59	3056	60 15 56	3089

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
14	Aldebaran	W.	104° 49′ 20″	2120	106° 39′ 49″	2116	108° 30′ 24″	2113	110° 21′ 3″	2112
	Mars	W.	96 43 5	2237	98 30 37	2232	100 18 17	2228	102 6 3	2224
	Pollux	W.	62 20 22	2058	64 12 26	2052	66 4 39	2048	67 56 59	2044
	Regulus	W.	25 19 29	2048	27 11 49	2042	29 4 17	2037	30 56 53	2033
	Spica	E.	28 51 49	2061	26 59 49	2059	25 7 46	2057	23 15 41	2058
	Antares	E.	74 38 22	2043	72 45 55	2039	70 53 21	2034	69 0 40	2030
15	Mars	W.	111 5 56	2216	112 53 59	2217	114 42 1	2218	116 30 1	2220
	Pollux	W.	77 19 46	2035	79 12 26	2035	81 5 5	2037	82 57 42	2038
	Regulus	W.	40 21 3	2025	42 13 59	2025	44 6 54	2026	45 59 47	2028
	Antares	E.	59 36 11	2023	57 43 12	2023	55 50 14	2024	53 57 17	2026
	α Aquilæ	E.	110 46 49	2795	109 12 14	2778	107 37 17	2763	106 2 0	2751
16	Pollux	W.	92 19 43	2059	94 11 46	2065	96 3 39	2072	97 55 21	2080
	Regulus	W.	55 23 9	2048	57 15 28	2054	59 7 38	2061	60 59 37	2069
	Antares	E.	44 33 45	2047	42 41 24	2053	40 49 13	2060	38 57 12	2068
	α Aquilæ	E.	98 2 42	2725	96 26 36	2726	94 50 31	2729	93 14 30	2735
	Jupiter	E.	101 27 45	2080	99 36 15	2086	97 44 55	2093	95 53 45	2101
17	Pollux	W.	107 10 33	2129	109 0 48	2140	110 50 46	2153	112 40 25	2165
	Regulus	W.	70 16 17	2116	72 6 51	2128	73 57 8	2139	75 47 7	2152
	Antares	E.	29 40 24	2116	27 49 49	2127	25 59 31	2139	24 9 31	2151
	α Aquilæ	E.	85 16 55	2787	83 42 10	2804	82 7 47	2821	80 33 47	2842
	Jupiter	E.	86 41 10	2148	84 51 24	2160	83 1 56	2172	81 12 46	2184
18	Regulus	W.	84 52 2	2223	86 39 56	2237	88 27 28	2253	90 14 36	2270
	Spica	W.	30 52 45	2235	32 40 20	2249	34 27 34	2264	36 14 26	2279
	α Aquilæ	E.	72 50 58	2968	71 20 5	3000	69 49 52	3034	68 20 21	3069
	Jupiter	E.	72 11 51	2254	70 24 44	2270	68 38 0	2286	66 51 40	2302
19	Regulus	W.	99 4 11	2355	100 48 51	2373	102 33 5	2391	104 16 53	2409
	Spica	W.	45 3 0	2362	46 47 30	2379	48 31 35	2396	50 15 15	2414
	Jupiter	E.	58 6 0	2387	56 22 7	2405	54 38 40	2423	52 55 38	2441
	α Aquilæ	E.	61 4 32	3285	59 40 3	3336	58 16 33	3391	56 54 6	3450
	Fomalhaut	E.	83 33 27	2692	81 56 37	2713	80 20 14	2735	78 44 20	2756
	Venus	E.	97 6 1	2629	95 27 46	2649	93 49 58	2669	92 12 36	2688
	α Pegasi	E.	105 20 13	2553	103 40 14	2568	102 0 35	2583	100 21 17	2599
20	Regulus	W.	112 49 24	2501	114 30 36	2519	116 11 23	2538	117 51 44	2556
	Spica	W.	58 47 12	2505	60 28 18	2523	62 8 59	2542	63 49 14	2560
	Jupiter	E.	44 26 58	2534	42 46 32	2552	41 6 31	2571	39 26 56	2589
	α Aquilæ	E.	50 19 38	3808	49 4 44	3896	47 51 20	3990	46 39 31	4092
	Fomalhaut	E.	70 52 29	2880	69 19 45	2907	67 47 35	2935	66 16 0	2964
	Venus	E.	84 12 25	2789	82 37 43	2810	81 3 28	2830	79 29 39	2851
	α Pegasi	E.	92 10 28	2686	90 33 29	2704	88 56 54	2722	87 20 44	2742
	Saturn	E.	95 57 46	2559	94 17 55	2578	92 38 30	2596	90 59 30	2615
	Sun	E.	129 36 44	2851	128 3 22	2869	126 30 24	2888	124 57 50	2908
21	Spica	W	72 4 17	2650	73 42 4	2667	75 19 28	2684	76 56 29	2702
	Antares	W.	26 11 21	2646	27 49 14	2663	29 26 43	2681	31 3 49	2698
	Jupiter	E.	31 15 16	2681	29 38 10	2698	28 1 28	2716	26 25 9	2734
	α Aquilæ	E.	41 7 27	4752	40 7 11	4923	39 9 15	5111	38 13 46	5318
	Fomalhaut	E.	58 47 33	3124	57 19 52	3158	55 52 53	3195	54 26 38	3234

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	Venus	E.	77° 56′ 17″	2871	76° 23′ 21″	2891	74° 50′ 50″	2910	73° 18′ 44″	2931
	α Pegasi	E.	85 45 0	2761	84 9 41	2780	82 34 47	2800	81 0 19	2819
	Saturn	E.	89 20 56	2634	87 42 47	2652	86 5 2	2670	84 27 42	2689
	Sun	E.	123 25 41	2927	121 53 56	2946	120 22 35	2965	118 51 38	2983
22	Spica	W.	78 33 6	2719	80 9 21	2735	81 45 14	2752	83 20 45	2768
	Antares	W.	32 40 32	2715	34 16 52	2732	35 52 50	2747	37 28 27	2764
	Fomalhaut	E.	53 1 9	3274	51 36 27	3317	50 12 35	3361	48 49 34	3408
	Venus	E.	65 44 29	3027	64 14 50	3046	62 45 34	3065	61 16 41	3082
	α Pegasi	E.	73 14 22	2920	71 42 28	2940	70 11 0	2961	68 39 58	2982
	Saturn	E.	76 27 6	2778	74 52 9	2795	73 17 34	2812	71 43 22	2828
	Sun	E.	111 22 42	3076	109 54 3	3093	108 25 45	3111	106 57 49	3128
23	Spica	W.	91 13 12	2844	92 46 43	2858	94 19 56	2872	95 52 51	2885
	Antares	W.	45 21 19	2840	46 54 55	2854	48 28 13	2867	50 1 14	2881
	Fomalhaut	E.	42 8 43	3691	40 51 46	3760	39 36 2	3836	38 21 37	3919
	Venus	E.	53 57 36	3168	52 30 48	3184	51 4 20	3199	49 38 10	3214
	α Pegasi	E.	61 11 24	3088	59 43 0	3111	58 15 4	3133	56 47 35	3157
	Saturn	E.	63 57 38	2909	62 25 31	2924	60 53 42	2939	59 22 12	2953
	Sun	E.	99 43 11	3209	98 17 13	3225	96 51 34	3240	95 26 12	3254
24	Antares	W.	57 42 9	2942	59 13 35	2953	60 44 47	2963	62 15 46	2973
	Venus	E.	42 31 43	3285	41 7 14	3299	39 43 1	3311	38 19 2	3324
	α Pegasi	E.	49 37 14	3280	48 12 39	3307	46 48 36	3335	45 25 5	3365
	Saturn	E.	51 49 7	3021	50 19 20	3034	48 49 50	3047	47 20 35	3058
	Sun	E.	88 23 25	3320	86 59 37	3332	85 36 2	3344	84 12 41	3354
25	Antares	W.	69 47 46	3016	71 17 39	3023	72 47 23	3030	74 16 58	3036
	Venus	E.	31 22 32	3379	29 59 52	3389	28 37 23	3399	27 15 5	3409
	Saturn	E.	39 57 58	3118	38 30 10	3129	37 2 35	3140	35 35 14	3152
	Sun	E.	77 18 51	3401	75 56 36	3410	74 34 31	3417	73 12 34	3425
26	Antares	W.	81 43 10	3061	83 12 7	3065	84 40 59	3069	86 9 47	3071
	α Aquilæ	W.	40 1 35	5186	40 56 7	5063	41 52 13	4950	42 49 48	4848
	Jupiter	W.	23 52 48	3096	25 21 3	3100	26 49 13	3102	28 17 20	3105
	Saturn	E.	28 22 9	3217	26 56 20	3234	25 30 51	3252	24 5 43	3273
	Sun	E.	66 24 43	3454	65 3 27	3458	63 42 16	3462	62 21 9	3466
27	Antares	W.	93 33 8	3078	95 1 44	3079	96 30 19	3079	97 58 54	3079
	α Aquilæ	W.	47 56 30	4454	49 1 3	4393	50 6 31	4336	51 12 50	4284
	Jupiter	W.	35 37 19	3111	37 5 15	3111	38 33 11	3111	40 1 7	3111
	Sun	E.	55 36 28	3478	54 15 39	3479	52 54 51	3480	51 34 5	3480
28	Antares	W.	105 22 4	3072	106 50 48	3069	108 19 36	3066	109 48 27	3063
	α Aquilæ	W.	56 55 31	4073	58 5 59	4038	59 17 1	4006	60 28 35	3975
	Jupiter •	W.	47 21 5	3102	48 49 12	3100	50 17 22	3097	51 45 35	3093
	Sun	E.	44 50 14	3479	43 29 26	3478	42 8 37	3477	40 47 47	3476
29	α Aquilæ	W.	66 33 29	3847	67 47 43	3824	69 2 20	3804	70 17 18	3784
	Jupiter	W.	59 7 50	3073	60 36 32	3068	62 5 21	3063	63 34 16	3057
	Sun	E.	34 3 15	3469	32 42 16	3468	31 21 16	3468	30 0 16	3467
30	α Aquilæ	W.	76 36 56	3700	77 53 43	3686	79 10 45	3672	80 28 2	3659

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Venus	E.	71° 47′ 4″	2950	70° 15′ 49″	2970	68° 44′ 59″	2989	67° 14′ 32″	3008
	α Pegasi	E.	79 26 16	2839	77 52 39	2859	76 19 27	2879	74 46 41	2900
	Saturn	E.	82 50 47	2707	81 14 16	2725	79 38 9	2743	78 2 26	2760
	Sun	E.	117 21 4	3002	115 50 54	3021	114 21 7	3039	112 51 43	3058
22	Spica	W.	84 55 55	2784	86 30 44	2799	88 5 13	2815	89 39 22	2829
	Antares	W.	39 3 42	2780	40 38 36	2795	42 13 10	2811	43 47 24	2825
	Fomalhaut	E.	47 27 26	3457	46 6 14	3510	44 46 1	3565	43 26 49	3626
	Venus	E.	59 48 9	3100	58 19 59	3118	56 52 11	3135	55 24 44	3151
	α Pegasi	E.	67 9 23	3003	65 39 14	3024	64 9 31	3045	62 40 14	3067
	Saturn	E.	70 9 31	2845	68 36 2	2861	67 2 53	2877	65 30 5	2894
	Sun	E.	105 30 13	3145	104 2 58	3162	102 36 3	3178	101 9 27	3194
23	Spica	W.	97 25 29	2898	98 57 50	2911	100 29 55	2923	102 1 45	2935
	Antares	W.	51 33 57	2894	53 6 24	2907	54 38 34	2919	56 10 29	2931
	Fomalhaut	E.	37 8 36	4009	35 57 5	4107	34 47 10	4217	33 39 0	4340
	Venus	E.	48 12 18	3230	46 46 44	3244	45 21 27	3259	43 56 27	3272
	α Pegasi	E.	55 20 34	3180	53 54 1	3204	52 27 56	3228	51 2 20	3253
	Saturn	E.	57 51 0	2967	56 20 6	2981	54 49 30	2994	53 19 10	3008
	Sun	E.	94 1 7	3268	92 36 18	3282	91 11 45	3295	89 47 28	3307
24	Antares	W.	63 46 33	2982	65 17 8	2992	66 47 31	3000	68 17 44	3009
	Venus	E.	36 55 18	3336	35 31 47	3346	34 8 29	3358	32 45 24	3369
	α Pegasi	E.	44 2 9	3397	42 39 49	3431	41 18 8	3467	39 57 7	3505
	Saturn	E.	45 51 34	3070	44 22 48	3082	42 54 17	3094	41 26 0	3106
	Sun	E.	82 49 32	3365	81 26 35	3375	80 3 50	3384	78 41 15	3393
25	Antares	W.	75 46 26	3043	77 15 46	3047	78 45 0	3052	80 14 8	3057
	Venus	E.	25 52 59	3419	24 31 4	3429	23 9 20	3439	21 47 48	3449
	Saturn	E.	34 8 7	3164	32 41 15	3176	31 14 37	3189	29 48 15	3203
	Sun	E.	71 50 46	3431	70 29 5	3438	69 7 31	3444	67 46 4	3449
26	Antares	W.	87 38 32	3073	89 7 14	3075	90 35 54	3077	92 4 32	3078
	α Aquilæ	W.	43 48 45	4754	44 48 59	4670	45 50 24	4592	46 52 56	4520
	Jupiter	W.	29 45 24	3107	31 13 25	3108	32 41 25	3110	34 9 23	3111
	Saturn	E.	22 41 0	3296	21 16 44	3323	19 52 59	3356	18 29 52	3397
	Sun	E.	61 0 7	3469	59 39 8	3471	58 18 12	3474	56 57 19	3476
27	Antares	W.	99 27 29	3078	100 56 5	3077	102 24 43	3075	103 53 23	3074
	α Aquilæ	W.	52 19 57	4236	53 27 49	4191	54 36 24	4149	55 45 39	4110
	Jupiter	W.	41 29 3	3110	42 57 1	3109	44 25 0	3107	45 53 1	3105
	Sun	E.	50 13 19	3480	48 52 33	3480	47 31 47	3480	46 11 1	3480
28	Antares	W.	111 17 22	3060	112 46 21	3056	114 15 24	3052	115 44 32	3048
	α Aquilæ	W.	61 40 39	3946	62 53 12	3919	64 6 12	3894	65 19 38	3869
	Jupiter	W.	53 13 53	3090	54 42 15	3087	56 10 41	3082	57 39 13	3078
	Sun	E.	39 26 56	3474	38 6 3	3473	36 45 9	3471	35 24 13	3470
29	α Aquilæ	W.	71 32 37	3766	72 48 15	3748	74 4 11	3731	75 20 25	3715
	Jupiter	W.	65 3 18	3052	66 32 26	3046	68 1 42	3040	69 31 5	3034
	Sun	E.	28 39 15	3468	27 18 15	3469	25 57 16	3471	24 36 19	3475
30	α Aquilæ	W.	81 45 33	3648	83 3 16	3635	84 21 12	3624	85 39 20	3615

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	2 34 5.44	9.546	N.15 7 24.2	+45.30	15 54.15	66.07	3 1.37	0.309
Thur.	2	2 37 54.84	9.569	15 25 24.0	44.67	15 53.92	66.15	3 8.51	0.286
Frid.	3	2 41 44.78	9.592	15 43 8.4	44.03	15 53.69	66.23	3 15.12	0.263
Sat.	4	2 45 35.26	9.615	16 0 37.2	43.37	15 53.46	66.31	3 21.18	0.240
Sun.	5	2 49 26.29	9.638	16 17 50.1	42.70	15 53.24	66.39	3 26.68	0.217
Mon.	6	2 53 17.88	9.661	16 34 46.8	42.02	15 53.02	66.47	3 31.62	0.194
Tues.	7	2 57 10.03	9.685	16 51 26.9	41.32	15 52.80	66.55	3 36.02	0.171
Wed.	8	3 1 2.73	9.708	17 7 50.1	40.61	15 52.59	66.63	3 39.86	0.148
Thur.	9	3 4 55.99	9.731	17 23 56.1	39.88	15 52.38	66.71	3 43.14	0.125
Frid.	10	3 8 49.81	9.754	17 39 44.5	39.15	15 52.18	66.79	3 45.88	0.102
Sat.	11	3 12 44.19	9.777	17 55 15.2	38.41	15 51.97	66.87	3 48.06	0.079
Sun.	12	3 16 39.12	9.800	18 10 27.8	37.65	15 51.77	66.96	3 49.68	0.056
Mon.	13	3 20 34.61	9.823	18 25 22.3	36.88	15 51.57	67.04	3 50.74	0.033
Tues.	14	3 24 30.66	9.847	18 39 58.2	36.10	15 51.37	67.12	3 51.24	−0.009
Wed.	15	3 28 27.28	9.870	18 54 15.2	35.31	15 51.17	67.20	3 51.18	+0.014
Thur.	16	3 32 24.46	9.894	19 8 13.1	34.51	15 50.98	67.29	3 50.56	0.038
Frid.	17	3 36 22.20	9.917	19 21 51.5	33.70	15 50.79	67.37	3 49.38	0.062
Sat.	18	3 40 20.51	9.941	19 35 10.3	32.87	15 50.60	67.45	3 47.64	0.085
Sun.	19	3 44 19.38	9.964	19 48 9.3	32.04	15 50.41	67.53	3 45.32	0.108
Mon.	20	3 48 18.82	9.988	20 0 48.3	31.19	15 50.23	67.61	3 42.44	0.131
Tues.	21	3 52 18.82	10.011	20 13 6.8	30.34	15 50.05	67.69	3 39.01	0.154
Wed.	22	3 56 19.38	10.035	20 25 4.6	29.47	15 49.87	67.76	3 35.03	0.177
Thur.	23	4 0 20.48	10.057	20 36 41.7	28.60	15 49.69	67.83	3 30.50	0.200
Frid.	24	4 4 22.11	10.079	20 47 57.6	27.71	15 49.52	67.90	3 25.43	0.222
Sat.	25	4 8 24.27	10.101	20 58 52.1	26.82	15 49.35	67.97	3 19.84	0.244
Sun.	26	4 12 26.95	10.122	21 9 25.1	25.91	15 49.18	68.04	3 13.74	0.265
Mon.	27	4 16 30.14	10.143	21 19 36.2	24.99	15 49.02	68.11	3 7.14	0.286
Tues.	28	4 20 33.82	10.163	21 29 25.2	24.07	15 48.86	68.18	3 0.04	0.306
Wed.	29	4 24 37.98	10.182	21 38 51.9	23.14	15 48.71	68.24	2 52.46	0.325
Thur.	30	4 28 42.60	10.201	21 47 56.0	22.20	15 48.57	68.30	2 44.42	0.344
Frid.	31	4 32 47.65	10.219	21 56 37.4	21.26	15 48.43	68.36	2 35.94	0.362
Sat.	32	4 36 53.14	10.236	N.22 4 55.8	+20.29	15 48.29	68.42	2 27.04	0.379

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.18$ from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	2 34 5.92	9.547	N.15 7 26.5	+45.30	3 1.39	0.309	2 37 7.31
Thur.	2	2 37 55.34	9.570	15 25 26.4	44.67	3 8.53	0.286	2 41 3.87
Frid.	3	2 41 45.30	9.593	15 43 10.9	44.03	3 15.13	0.263	2 45 0.43
Sat.	4	2 45 35.80	9.616	16 0 39.7	43.37	3 21.19	0.240	2 48 56.98
Sun.	5	2 49 26.85	9.639	16 17 52.6	42.70	3 26.69	0.217	2 52 53.54
Mon.	6	2 53 18.46	9.662	16 34 49.3	42.02	3 31.63	0.194	2 56 50.09
Tues.	7	2 57 10.62	9.685	16 51 29.4	41.32	3 36.03	0.171	3 0 46.65
Wed.	8	3 1 3.33	9.708	17 7 52.6	40.61	3 39.87	0.148	3 4 43.20
Thur.	9	3 4 56.60	9.731	17 23 58.6	39.88	3 43.14	0.125	3 8 39.76
Frid.	10	3 8 50.43	9.754	17 39 47.0	39.15	3 45.89	0.102	3 12 36.32
Sat.	11	3 12 44.81	9.777	17 55 17.7	38.41	3 48.07	0.079	3 16 32.88
Sun.	12	3 16 39.75	9.800	18 10 30.3	37.65	3 49.68	0.056	3 20 29.43
Mon.	13	3 20 35.24	9.823	18 25 24.7	36.88	3 50.74	0.033	3 24 25.99
Tues.	14	3 24 31.30	9.847	18 40 0.5	36.10	3 51.24	−0.009	3 28 22.54
Wed.	15	3 28 27.92	9.870	18 54 17.4	35.31	3 51.18	+0.014	3 32 19.10
Thur.	16	3 32 25.10	9.894	19 8 15.3	34.51	3 50.56	0.038	3 36 15.66
Frid.	17	3 36 22.84	9.917	19 21 53.6	33.70	3 49.38	0.062	3 40 12.22
Sat.	18	3 40 21.15	9.941	19 35 12.3	32.87	3 47.63	0.085	3 44 8.77
Sun.	19	3 44 20.02	9.964	19 48 11.3	32.04	3 45.31	0.108	3 48 5.33
Mon.	20	3 48 19.45	9.988	20 0 50.3	31.19	3 42.43	0.131	3 52 1.88
Tues.	21	3 52 19 44	10.011	20 13 8.7	30.34	3 39.00	0.154	3 55 58.44
Wed.	22	3 56 19.98	10.034	20 25 6.4	29 47	3 35.02	0.177	3 59 55.00
Thur.	23	4 0 21.07	10.056	20 36 43.4	28.60	3 30.49	0.200	4 3 51.56
Frid.	24	4 4 22.69	10.078	20 47 59.2	26.71	3 25.42	0.222	4 7 48.11
Sat.	25	4 8 24.84	10.100	20 58 53.6	26 82	3 19.83	0.244	4 11 44.67
Sun.	26	4 12 27.50	10.121	21 9 26.5	25.91	3 13.73	0.265	4 15 41.23
Mon.	27	4 16 30.67	10.142	21 19 37.5	24.99	3 7.12	0.286	4 19 37.79
Tues.	28	4 20 34.33	10.162	21 29 26.4	24.07	3 0.02	0.306	4 23 34.35
Wed.	29	4 24 38.47	10.181	21 38 53.0	23.14	2 52.44	0.325	4 27 30.91
Thur.	30	4 28 43.07	10.200	21 47 57.0	22.20	2 44.39	0.344	4 31 27.46
Frid.	31	4 32 48.10	10.218	21 56 38.4	21.26	2 35.92	0.362	4 35 24.02
Sat.	32	4 36 53.56	10.235	N.22 4 56.7	+20.29	2 27.02	0.379	4 39 20.58

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

Diff. for 1 hour.
+9^s.8565
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	121	40 57 32.5	57 5.8	145.49	+0.51	0.0035568	+44.8	21 19 22.54
2	122	41 55 43.4	55 16.6	145.42	0.54	.0036637	44.2	21 15 26.62
3	123	42 53 52.6	53 25.7	145.35	0.53	.0037689	43.4	21 11 30.70
4	124	43 52 0.0	51 32.9	145.27	0.49	.0038725	42.7	21 7 34.80
5	125	44 50 5.6	49 38.3	145.19	0.42	.0039743	42.0	21 3 38.89
6	126	45 48 9.4	47 42.0	145.12	0.34	.0040744	41.3	20 59 42.98
7	127	46 46 11.3	45 43.8	145.04	0.22	.0041729	40.6	20 55 47.06
8	128	47 44 11.3	43 43.6	144.96	+0.10	.0042699	40.0	20 51 51.15
9	129	48 42 9.5	41 41.6	144.88	−0.02	.0043655	39.5	20 47 55.24
10	130	49 40 5.8	39 37.7	144.81	0.15	.0044598	39.0	20 43 59.33
11	131	50 38 0.3	37 32.1	144.73	0.27	.0045529	38.6	20 40 3.41
12	132	51 35 53.0	35 24.7	144.66	0.38	.0046449	38.1	20 36 7.50
13	133	52 33 44.0	33 15.5	144.59	0.48	.0047359	37.7	20 32 11.59
14	134	53 31 33.3	31 4.6	144.52	0.54	.0048260	37.3	20 28 15.68
15	135	54 29 21.0	28 52.1	144.46	0.57	.0049151	36.9	20 24 19.77
16	136	55 27 7.3	26 38.3	144.40	0.57	.0050033	36.5	20 20 23.86
17	137	56 24 52.2	24 23.1	144.34	0.54	.0050906	36.2	20 16 27.95
18	138	57 22 35.7	22 6.4	144.29	0.48	.0051770	35.8	20 12 32.04
19	139	58 20 17.9	19 48.4	144.23	0.40	.0052625	35.4	20 8 36.13
20	140	59 17 58.9	17 29.2	144.19	0.30	.0053471	35.0	20 4 40.22
21	141	60 15 38.9	14 9.0	144.14	0.18	.0054306	34.5	20 0 44.31
22	142	61 13 17.8	12 47.7	144.10	−0.05	.0055127	33.9	19 56 48.40
23	143	62 10 55.6	10 25.3	144.05	+0.08	.0055934	33.3	19 52 52.48
24	144	63 8 32.4	8 1.9	144.02	0.22	.0056726	32.6	19 48 56.57
25	145	64 6 8.4	5 37.8	143.98	0.34	.0057501	31.9	19 45 0.66
26	146	65 3 43.5	3 12.7	143.94	0.44	.0058258	31.1	19 41 4.75
27	147	66 1 17.7	0 46.7	143.91	0.53	.0058995	30.2	19 37 8.83
28	148	66 58 51.1	58 19.9	143.87	0.59	.0059711	29.3	19 33 12.92
29	149	67 56 23.5	55 52.1	143.83	0.62	.0060406	28.5	19 29 17.01
30	150	68 53 54.9	53 23.4	143.79	0.62	.0061079	27.6	19 25 21.10
31	151	69 51 25.4	50 53.7	143.75	0.58	.0061727	26.5	19 21 25.18
32	152	70 48 54.9	48 23.0	143.71	+0.52	0.0062352	+25.5	19 17 29.27

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.0.

Diff. for 1 hour.
—9s.8296
(Table II)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 56.6	14 59.5	54 43.8	+0.87	54 54.7	+0.95	23 48.4	1.97	28.6
2	15 2.7	15 6.2	55 6.5	1.02	55 19.1	1.07	δ		29.6
3	15 9.8	15 13.5	55 32.4	1.13	55 46.1	1.17	0 37.4	2.13	1.0
4	15 17.4	15 21.4	56 0.3	1.21	56 15.0	1.24	1 30.1	2.27	2.0
5	15 25.5	15 29.8	56 30.1	1.27	56 45.6	1.30	2 25.7	2.36	3.0
6	15 34.0	15 38.4	57 1.3	1.32	57 17.3	1.34	3 22.7	2.37	4.0
7	15 42.8	15 47.3	57 33.5	1.36	57 49.9	1.37	4 19.3	2.32	5.0
8	15 51.7	15 56.2	58 6.3	1.37	58 22.7	1.36	5 14.0	2.23	6.0
9	16 0.6	16 4.9	58 38.9	1.34	58 54.7	1.29	6 6.5	2.14	7.0
10	16 9.1	16 12.9	59 9.8	1.23	59 24.0	1.14	6 56.9	2.07	8.0
11	16 16.4	16 19.5	59 37.0	1.02	59 48.4	0.87	7 46.2	2.04	9.0
12	16 22.1	16 24.0	59 57.8	0.69	60 4.8	+0.48	8 35.4	2.07	10.0
13	16 25.2	16 25.6	60 9.2	+0.24	60 10.6	−0.01	9 25.9	2.15	11.0
14	16 25.1	16 23.7	60 8.9	−0.28	60 3.8	0.56	10 19.0	2.27	12.0
15	16 21.4	16 18.3	59 55.5	0.83	59 43.9	1.09	11 15.1	2.41	13.0
16	16 14.3	16 9.6	59 29.4	1.34	59 12.0	1.55	12 14.2	2.51	14.0
17	16 4.3	15 58.4	58 52.3	1.73	58 30.7	1.87	13 14.9	2.53	15.0
18	15 52.1	15 45.6	58 7.6	1.97	57 43.6	2.02	14 14.8	2.44	16.0
19	15 38.9	15 32.3	57 19.2	2.04	56 54.9	2.01	15 11.7	2.28	17.0
20	15 25.8	15 19.6	56 31.1	1.95	56 8.4	1.85	16 4.3	2.09	18.0
21	15 13.8	15 8.5	55 46.9	1.72	55 27.2	1.57	16 52.5	1.91	19.0
22	15 3.6	14 59.3	55 9.4	1.39	54 53.9	1.20	17 36.7	1.77	20.0
23	14 55.7	14 52.8	54 40.6	1.00	54 29.9	0.79	18 18.1	1.68	21.0
24	14 50.6	14 49.0	54 21.7	0.58	54 16.0	−0.36	18 57.8	1.63	22.0
25	14 48.2	14 48.0	54 12.9	−0.15	54 12.3	+0.05	19 37.0	1.64	23.0
26	14 48.6	14 49.7	54 14.2	+0.26	54 18.4	0.45	20 16.8	1.69	24.0
27	14 51.5	14 53.8	54 24.9	0.62	54 33.4	0.79	20 58.4	1.79	25.0
28	14 56.5	14 59.8	54 43.7	0.93	54 55.6	1.06	21 42.8	1.92	26.0
29	15 3.5	15 7.4	55 8.9	1.16	55 23.4	1.25	22 30.8	2.09	27.0
30	15 11.5	15 15.9	55 38.7	1.31	55 54.8	1.36	23 22.8	2.25	28.0
31	15 20.4	15 24.9	56 11.2	1.38	56 27.8	1.38	δ		29.0
32	15 29.4	15 33.8	56 44.3	+1.37	57 0.5	+1.34	0 18.3	2.37	1.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 41 43.56	1.9418	N.15 36 48.6	11.799
1	1 43 40.21	1.9467	15 48 34.8	11.741
2	1 45 37.16	1.9517	16 0 17.5	11.681
3	1 47 34.41	1.9567	16 11 56.5	11.620
4	1 49 31.96	1.9617	16 23 31.9	11.559
5	1 51 29.81	1.9667	16 35 3.6	11.497
6	1 53 27.96	1.9718	16 46 31.5	11.433
7	1 55 26.42	1.9769	16 57 55.5	11.368
8	1 57 25.19	1.9821	17 9 15.7	11.303
9	1 59 24.27	1.9873	17 20 31.9	11.236
10	2 1 23.66	1.9925	17 31 44.0	11.168
11	2 3 23.37	1.9978	17 42 52.0	11.099
12	2 5 23.40	2.0032	17 53 55.9	11.029
13	2 7 23.75	2.0085	18 4 55.5	10.958
14	2 9 24.42	2.0139	18 15 50.8	10.886
15	2 11 25.42	2.0194	18 26 41.8	10.813
16	2 13 26.75	2.0249	18 37 28.3	10.738
17	2 15 28.41	2.0304	18 48 10.3	10.661
18	2 17 30.40	2.0359	18 58 47.7	10.584
19	2 19 32.72	2.0415	19 9 20.4	10.507
20	2 21 35.38	2.0472	19 19 48.5	10.428
21	2 23 38.38	2.0527	19 30 11.8	10.348
22	2 25 41.71	2.0583	19 40 30.3	10.266
23	2 27 45.38	2.0641	N.19 50 43.8	10.183

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 29 49.40	2.0698	N.20 0 52.3	10.100
1	2 31 53.76	2.0755	20 10 55.8	10.015
2	2 33 58.46	2.0813	20 20 54.1	9.928
3	2 36 3.51	2.0871	20 30 47.2	9.841
4	2 38 8.91	2.0929	20 40 35.0	9.752
5	2 40 14.66	2.0987	20 50 17.5	9.663
6	2 42 20.75	2.1044	20 59 54.6	9.572
7	2 44 27.19	2.1102	21 9 26.2	9.480
8	2 46 33.98	2.1162	21 18 52.2	9.388
9	2 48 41.13	2.1221	21 28 12.7	9.294
10	2 50 48.63	2.1279	21 37 27.5	9.198
11	2 52 56.48	2.1337	21 46 36.5	9.101
12	2 55 4.67	2.1395	21 55 39.6	9.003
13	2 57 13.22	2.1454	22 4 36.8	8.904
14	2 59 22.12	2.1513	22 13 28.1	8.804
15	3 1 31.38	2.1572	22 22 13.3	8.702
16	3 3 40.99	2.1631	22 30 52.3	8.599
17	3 5 50.95	2.1690	22 39 25.2	8.496
18	3 8 1.27	2.1749	22 47 51.8	8.390
19	3 10 11.94	2.1807	22 56 12.0	8.283
20	3 12 22.96	2.1866	23 4 25.8	8.176
21	3 14 34.33	2.1924	23 12 33.2	8.068
22	3 16 46.05	2.1982	23 20 34.0	7.958
23	3 18 58.12	2.2040	23 28 28.2	7.847
24	3 21 10.53	2.2098	N.23 36 15.7	7.735

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 21 10.53	2.2098	N.23 36 15.7	7.735
1	3 23 23.29	2.2156	23 43 56.4	7.622
2	3 25 36.40	2.2213	23 51 30.3	7.508
3	3 27 49.85	2.2271	23 58 57.3	7.392
4	3 30 3.65	2.2328	24 6 17.3	7.275
5	3 32 17.79	2.2384	24 13 30.3	7.157
6	3 34 32.26	2.2440	24 20 36.2	7.038
7	3 36 47.07	2.2497	24 27 34.9	6.918
8	3 39 2.22	2.2553	24 34 26.3	6.797
9	3 41 17.70	2.2608	24 41 10.5	6.675
10	3 43 33.51	2.2663	24 47 47.3	6.551
11	3 45 49.65	2.2717	24 54 16.6	6.426
12	3 48 6.11	2.2771	25 0 38.4	6.300
13	3 50 22.90	2.2825	25 6 52.6	6.173
14	3 52 40.01	2.2878	25 12 59.2	6.046
15	3 54 57.43	2.2930	25 18 58.1	5.917
16	3 57 15.17	2.2982	25 24 49.2	5.787
17	3 59 33.22	2.3034	25 30 32.5	5.655
18	4 1 51.58	2.3086	25 36 7.8	5.523
19	4 4 10.25	2.3137	25 41 35.2	5.390
20	4 6 29.22	2.3186	25 46 54.6	5.256
21	4 8 48.48	2.3234	25 52 5.9	5.121
22	4 11 8.03	2.3283	25 57 9.1	4.985
23	4 13 27.88	2.3332	N.26 2 4.1	4.847

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 15 48.02	2.3380	N.26 6 50.7	4.708
1	4 18 8.44	2.3426	26 11 29.0	4.569
2	4 20 29.13	2.3471	26 15 59.0	4.430
3	4 22 50.09	2.3516	26 20 20.6	4.289
4	4 25 11.32	2.3560	26 24 33.7	4.147
5	4 27 32.81	2.3603	26 28 38.2	4.003
6	4 29 54.56	2.3646	26 32 34.1	3.860
7	4 32 16.56	2.3688	26 36 21.4	3.716
8	4 34 38.81	2.3729	26 40 0.0	3.570
9	4 37 1.31	2.3770	26 43 29.8	3.423
10	4 39 24.05	2.3809	26 46 50.8	3.277
11	4 41 47.02	2.3847	26 50 3.0	3.129
12	4 44 10.21	2.3883	26 53 6.3	2.980
13	4 46 33.62	2.3920	26 56 0.6	2.831
14	4 48 57.25	2.3957	26 58 46.0	2.682
15	4 51 21.10	2.3992	27 1 22.4	2.531
16	4 53 45.15	2.4025	27 3 49.7	2.378
17	4 56 9.40	2.4057	27 6 7.8	2.226
18	4 58 33.84	2.4089	27 8 16.8	2.073
19	5 0 58.47	2.4119	27 10 16.6	1.920
20	5 3 23.27	2.4148	27 12 7.2	1.767
21	5 5 48.25	2.4177	27 13 48.6	1.612
22	5 8 13.40	2.4205	27 15 20.6	1.456
23	5 10 38.71	2.4231	27 16 43.3	1.301
24	5 13 4.17	2.4256	N.27 17 56.7	1.145

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 5.					TUESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 13 4.17	2.4256	N.27 17 56.7	1.145	0	7 10 16.59	2.4167	N.25 8 49.8	6.486
1	5 15 29.78	2.4280	27 19 0.7	0.988	1	7 12 41.52	2.4142	25 2 16.1	6.638
2	5 17 55.53	2.4303	27 19 55.2	0.830	2	7 15 6.30	2.4116	24 55 33.3	6.789
3	5 20 21.42	2.4326	27 20 40.3	0.672	3	7 17 30.91	2.4088	24 48 41.4	6.940
4	5 22 47.44	2.4347	27 21 15.9	0.514	4	7 19 55.36	2.4061	24 41 40.5	7.089
5	5 25 13.58	2.4366	27 21 42.0	0.356	5	7 22 19.64	2.4033	24 34 30.7	7.238
6	5 27 39.83	2.4384	27 21 58.6	0.197	6	7 24 43.75	2.4003	24 27 12.0	7.386
7	5 30 6.19	2.4402	27 22 5.6	+0.037	7	7 27 7.68	2.3973	24 19 44.4	7.533
8	5 32 32.65	2.4418	27 22 3.1	−0.122	8	7 29 31.43	2.3943	24 12 8.0	7.679
9	5 34 59.21	2.4434	27 21 51.0	0.282	9	7 31 55.00	2.3913	24 4 22.9	7.824
10	5 37 25.86	2.4448	27 21 29.3	0.442	10	7 34 18.38	2.3881	23 56 29.1	7.969
11	5 39 52.59	2.4460	27 20 58.0	0.602	11	7 36 41.57	2.3848	23 48 26.6	8.114
12	5 42 19.38	2.4471	27 20 17.0	0.763	12	7 39 4.56	2.3816	23 40 15.4	8.257
13	5 44 46.24	2.4482	27 19 26.4	0.924	13	7 41 27.36	2.3783	23 31 55.7	8.399
14	5 47 13.17	2.4492	27 18 26.1	1.085	14	7 43 49.96	2.3749	23 23 27.5	8.541
15	5 49 40.15	2.4500	27 17 16.2	1.246	15	7 46 12.35	2.3715	23 14 50.8	8.682
16	5 52 7.17	2.4508	27 15 56.6	1.407	16	7 48 34.54	2.3682	23 6 5.7	8.822
17	5 54 34.24	2.4514	27 14 27.3	1.569	17	7 50 56.53	2.3648	22 57 12.2	8.960
18	5 57 1.34	2.4518	27 12 48.3	1.731	18	7 53 18.31	2.3613	22 48 10.5	9.098
19	5 59 28.46	2.4522	27 10 59.6	1.892	19	7 55 39.88	2.3577	22 39 0.5	9.235
20	6 1 55.60	2.4524	27 9 1.2	2.053	20	7 58 1.23	2.3541	22 29 42.3	9.370
21	6 4 22.75	2.4526	27 6 53.2	2.214	21	8 0 22.37	2.3505	22 20 16.1	9.504
22	6 6 49.91	2.4526	27 4 35.5	2.377	22	8 2 43.29	2.3468	22 10 41.8	9.638
23	6 9 17.06	2.4524	N.27 2 8.0	2.539	23	8 5 3.99	2.3433	N.22 0 59.5	9.771
	MONDAY 6.					WEDNESDAY 8.			
0	6 11 44.20	2.4522	N.26 59 30.8	2.700	0	8 7 24.48	2.3397	N.21 51 9.3	9.902
1	6 14 11.32	2.4519	26 56 44.0	2.861	1	8 9 44.75	2.3359	21 41 11.2	10.033
2	6 16 38.43	2.4516	26 53 47.5	3.022	2	8 12 4.79	2.3322	21 31 5.3	10.163
3	6 19 5.51	2.4510	26 50 41.3	3.183	3	8 14 24.61	2.3284	21 20 51.6	10.292
4	6 21 32.55	2.4504	26 47 25.5	3.343	4	8 16 44.20	2.3247	21 10 30.2	10.420
5	6 23 59.55	2.4497	26 44 0.1	3.504	5	8 19 3.57	2.3210	21 0 1.2	10.546
6	6 26 26.51	2.4488	26 40 25.0	3.665	6	8 21 22.72	2.3172	20 49 24.7	10.671
7	6 28 53.41	2.4478	26 36 40.3	3.825	7	8 23 41.64	2.3135	20 38 40.7	10.796
8	6 31 20.24	2.4467	26 32 46.0	3.985	8	8 26 0.34	2.3097	20 27 49.2	10.919
9	6 33 47.01	2.4456	26 28 42.1	4.145	9	8 28 18.81	2.3060	20 16 50.4	11.041
10	6 36 13.71	2.4443	26 24 28.6	4.304	10	8 30 37.06	2.3022	20 5 44.3	11.162
11	6 38 40.33	2.4429	26 20 5.6	4.462	11	8 32 55.08	2.2984	19 54 31.0	11.282
12	6 41 6.86	2.4414	26 15 33.1	4.621	12	8 35 12.87	2.2947	19 43 10.5	11.401
13	6 43 33.30	2.4399	26 10 51.1	4.779	13	8 37 30.44	2.2910	19 31 42.9	11.518
14	6 45 59.65	2.4382	26 5 59.6	4.937	14	8 39 47.79	2.2872	19 20 8.3	11.634
15	6 48 25.89	2.4364	26 0 58.6	5.095	15	8 42 4.91	2.2835	19 8 26.8	11.749
16	6 50 52.02	2.4346	25 55 48.2	5.251	16	8 44 21.81	2.2798	18 56 38.4	11.863
17	6 53 18.04	2.4328	25 50 28.5	5.407	17	8 46 38.49	2.2761	18 44 43.2	11.976
18	6 55 43.95	2.4308	25 44 59.4	5.562	18	8 48 54.94	2.2724	18 32 41.3	12.087
19	6 58 9.73	2.4286	25 39 21.0	5.718	19	8 51 11.18	2.2688	18 20 32.7	12.198
20	7 0 35.38	2.4263	25 33 33.2	5.874	20	8 53 27.20	2.2652	18 8 17.5	12.308
21	7 3 0.89	2.4241	25 27 36.1	6.028	21	8 55 43.00	2.2616	17 55 55.8	12.416
22	7 5 26.27	2.4218	25 21 29.8	6.181	22	8 57 58.59	2.2580	17 43 27.6	12.523
23	7 7 51.51	2.4193	25 15 14.4	6.333	23	9 0 13.96	2.2543	17 30 53.1	12.628
24	7 10 16.59	2.4167	N.25 8 49.8	6.486	24	9 2 29.11	2.2507	N.17 18 12.3	12.733

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 2 29.11	2.2507	N.17 18 12.3	12.733	0	10 47 20.52	2.1417	N. 5 31 34.8	16.189
1	9 4 44.05	2.2473	17 5 25.2	12.836	1	10 49 29.00	2.1411	5 15 22.3	16.227
2	9 6 58.79	2.2439	16 52 32.0	12.937	2	10 51 37.45	2.1406	4 59 7.6	16.263
3	9 9 13.32	2.2405	16 39 32.8	13.037	3	10 53 45.88	2.1402	4 42 50.7	16.298
4	9 11 27.65	2.2371	16 26 27.6	13.137	4	10 55 54.28	2.1398	4 26 31.8	16.332
5	9 13 41.77	2.2337	16 13 16.4	13.235	5	10 58 2.66	2.1396	4 10 10.9	16.364
6	9 15 55.69	2.2303	15 59 59.4	13.332	6	11 0 11.03	2.1394	3 53 48.1	16.395
7	9 18 9.41	2.2271	15 46 36.6	13.428	7	11 2 19.39	2.1393	3 37 23.5	16.423
8	9 20 22.94	2.2238	15 33 8.1	13.522	8	11 4 27.75	2.1393	3 20 57.3	16.450
9	9 22 36.27	2.2206	15 19 34.0	13.615	9	11 6 36.11	2.1394	3 4 29.5	16.476
10	9 24 49.41	2.2174	15 5 54.3	13.707	10	11 8 44.48	2.1395	2 48 0.2	16.500
11	9 27 2.36	2.2143	14 52 9.2	13.796	11	11 10 52.85	2.1397	2 31 29.5	16.523
12	9 29 15.13	2.2112	14 38 18.8	13.884	12	11 13 1.24	2.1401	2 14 57.4	16.545
13	9 31 27.71	2.2082	14 24 23.1	13.972	13	11 15 9.66	2.1405	1 58 24.1	16.565
14	9 33 40.12	2.2053	14 10 22.1	14.059	14	11 17 18.10	2.1409	1 41 49.6	16.583
15	9 35 52.35	2.2023	13 56 16.0	14.144	15	11 19 26.57	2.1415	1 25 14.1	16.599
16	9 38 4.40	2.1994	13 42 4.8	14.229	16	11 21 35.08	2.1422	1 8 37.7	16.614
17	9 40 16.28	2.1967	13 27 48.5	14.312	17	11 23 43.63	2.1429	0 52 0.4	16.628
18	9 42 28.00	2.1939	13 13 27.3	14.393	18	11 25 52.22	2.1437	0 35 22.3	16.641
19	9 44 39.55	2.1912	12 59 1.3	14.472	19	11 28 0.87	2.1447	0 18 43.5	16.651
20	9 46 50.94	2.1886	12 44 30.6	14.550	20	11 30 9.58	2.1456	N. 0 2 4.2	16.658
21	9 49 2.18	2.1860	12 29 55.3	14.627	21	11 32 18.34	2.1466	S. 0 14 35.5	16.665
22	9 51 13.26	2.1834	12 15 15.4	14.703	22	11 34 27.17	2.1478	0 31 15.6	16.672
23	9 53 24.19	2.1810	N.12 0 30.9	14.778	23	11 36 36.08	2.1491	S. 0 47 56.1	16.677
FRIDAY 10.					SUNDAY 12.				
0	9 55 34.98	2.1786	N.11 45 42.0	14.852	0	11 38 45.06	2.1503	S. 1 4 36.8	16.679
1	9 57 45.62	2.1762	11 30 48.7	14.923	1	11 40 54.12	2.1517	1 21 17.6	16.680
2	9 59 56.12	2.1739	11 15 51.2	14.993	2	11 43 3.27	2.1533	1 37 58.4	16.678
3	10 2 6.49	2.1717	11 0 49.5	15.062	3	11 45 12.52	2.1549	1 54 39.0	16.675
4	10 4 16.73	2.1696	10 45 43.7	15.130	4	11 47 21.86	2.1565	2 11 19.4	16.671
5	10 6 26.84	2.1675	10 30 33.9	15.197	5	11 49 31.30	2.1582	2 27 59.5	16.666
6	10 8 36.83	2.1655	10 15 20.1	15.262	6	11 51 40.85	2.1601	2 44 39.3	16.659
7	10 10 46.70	2.1636	10 0 2.5	15.325	7	11 53 50.51	2.1620	3 1 18.6	16.650
8	10 12 56.46	2.1617	9 44 41.1	15.387	8	11 56 0.29	2.1640	3 17 57.3	16.638
9	10 15 6.10	2.1599	9 29 16.0	15.448	9	11 58 10.19	2.1660	3 34 35.2	16.625
10	10 17 15.64	2.1582	9 13 47.3	15.507	10	12 0 20.21	2.1682	3 51 12.3	16.612
11	10 19 25.08	2.1565	8 58 15.1	15.565	11	12 2 30.37	2.1704	4 7 48.6	16.597
12	10 21 34.42	2.1549	8 42 39.5	15.622	12	12 4 40.66	2.1727	4 24 23.9	16.579
13	10 23 43.67	2.1534	8 27 0.5	15.677	13	12 6 51.09	2.1751	4 40 58.1	16.560
14	10 25 52.83	2.1519	8 11 18.2	15.731	14	12 9 1.67	2.1777	4 57 31.1	16.538
15	10 28 1.90	2.1505	7 55 32.8	15.783	15	12 11 12.41	2.1802	5 14 2.7	16.515
16	10 30 10.89	2.1493	7 39 44.3	15.834	16	12 13 23.30	2.1828	5 30 32.9	16.491
17	10 32 19.81	2.1481	7 23 52.7	15.884	17	12 15 34.35	2.1855	5 47 1.6	16.466
18	10 34 28.66	2.1469	7 7 58.2	15.932	18	12 17 45.56	2.1883	6 3 28.8	16.438
19	10 36 37.44	2.1458	6 52 0.9	15.978	19	12 19 56.94	2.1912	6 19 54.2	16.408
20	10 38 46.16	2.1448	6 36 0.8	16.023	20	12 22 8.50	2.1941	6 36 17.8	16.377
21	10 40 54.82	2.1439	6 19 58.1	16.067	21	12 24 20.23	2.1971	6 52 39.4	16.343
22	10 43 3.43	2.1432	6 3 52.8	16.109	22	12 26 32.15	2.2002	7 8 59.0	16.309
23	10 45 12.00	2.1424	5 47 45.0	16.150	23	12 28 44.26	2.2034	7 25 16.5	16.272
24	10 47 20.52	2.1417	N. 5 31 34.8	16.189	24	12 30 56.56	2.2067	S. 7 41 31.7	16.234

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 30 56.56	2.2067	S. 7 41 31.7	16.234
1	12 33 9.06	2.2100	7 57 44.6	16.194
2	12 35 21.76	2.2133	8 13 55.0	16.152
3	12 37 34.66	2.2167	8 30 2.8	16.108
4	12 39 47.77	2.2203	8 46 7.9	16.063
5	12 42 1.10	2.2240	9 2 10.3	16.016
6	12 44 14.65	2.2277	9 18 9.8	15.967
7	12 46 28.42	2.2314	9 34 6.3	15.916
8	12 48 42.42	2.2352	9 49 59.7	15.863
9	12 50 56.64	2.2390	10 5 49.9	15.808
10	12 53 11.10	2.2429	10 21 36.7	15.759
11	12 55 25.79	2.2469	10 37 20.1	15.694
12	12 57 40.73	2.2511	10 53 0.0	15.634
13	12 59 55.92	2.2552	11 8 36.2	15.572
14	13 2 11.35	2.2593	11 24 8.7	15.509
15	13 4 27.03	2.2635	11 39 37.3	15.443
16	13 6 42.97	2.2678	11 55 1.9	15.376
17	13 8 59.17	2.2722	12 10 22.4	15.307
18	13 11 15.63	2.2766	12 25 38.7	15.236
19	13 13 32.36	2.2810	12 40 50.7	15.163
20	13 15 49.35	2.2854	12 55 58.3	15.088
21	13 18 6.61	2.2900	13 11 1.3	15.012
22	13 20 24.15	2.2947	13 25 59.7	14.934
23	13 22 41.97	2.2992	S. 13 40 53.4	14.854

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 25 0.06	2.3038	S. 13 55 42.2	14.772
1	13 27 18.43	2.3086	14 10 26.1	14.688
2	13 29 37.09	2.3134	14 25 4.8	14.602
3	13 31 56.04	2.3182	14 39 38.3	14.514
4	13 34 15.28	2.3231	14 54 6.5	14.425
5	13 36 34.81	2.3279	15 8 29.3	14.334
6	13 38 54.63	2.3328	15 22 46.6	14.241
7	13 41 14.75	2.3377	15 36 58.2	14.146
8	13 43 35.16	2.3427	15 51 4.1	14.049
9	13 45 55.87	2.3477	16 5 4.1	13.951
10	13 48 16.88	2.3527	16 18 58.2	13.851
11	13 50 38.19	2.3577	16 32 46.2	13.748
12	13 52 59.81	2.3628	16 46 28.0	13.645
13	13 55 21.73	2.3678	17 0 3.6	13.539
14	13 57 43.95	2.3728	17 13 32.7	13.431
15	14 0 6.47	2.3779	17 26 55.3	13.322
16	14 2 29.30	2.3831	17 40 11.3	13.211
17	14 4 52.44	2.3882	17 53 20.6	13.098
18	14 7 15.88	2.3932	18 6 23.0	12.983
19	14 9 39.63	2.3983	18 19 18.5	12.867
20	14 12 3.68	2.4034	18 32 7.0	12.748
21	14 14 28.04	2.4086	18 44 48.3	12.628
22	14 16 52.71	2.4137	18 57 22.4	12.507
23	14 19 17.68	2.4187	19 9 49.2	12.384
24	14 21 42.95	2.4237	S. 19 22 8.5	12.259

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 21 42.95	2.4237	S. 19 22 8.5	12.259
1	14 24 8.52	2.4287	19 34 20.3	12.132
2	14 26 34.40	2.4338	19 46 24.4	12.003
3	14 29 0.58	2.4388	19 58 20.7	11.873
4	14 31 27.06	2.4438	20 10 9.2	11.742
5	14 33 53.84	2.4487	20 21 49.7	11.608
6	14 36 20.91	2.4537	20 33 22.1	11.473
7	14 38 48.28	2.4586	20 44 46.4	11.337
8	14 41 15.94	2.4633	20 56 2.5	11.198
9	14 43 43.88	2.4681	21 7 10.2	11.058
10	14 46 12.11	2.4729	21 18 9.5	10.917
11	14 48 40.63	2.4777	21 29 0.3	10.774
12	14 51 9.43	2.4823	21 39 42.4	10.629
13	14 53 38.51	2.4869	21 50 15.8	10.484
14	14 56 7.86	2.4915	22 0 40.5	10.337
15	14 58 37.49	2.4960	22 10 56.3	10.188
16	15 1 7.38	2.5004	22 21 3.1	10.038
17	15 3 37.54	2.5048	22 31 0.9	9.887
18	15 6 7.96	2.5092	22 40 49.5	9.733
19	15 8 38.64	2.5134	22 50 28.9	9.579
20	15 11 9.57	2.5175	22 59 59.0	9.424
21	15 13 40.74	2.5215	23 9 19.8	9.267
22	15 16 12.15	2.5255	23 18 31.1	9.109
23	15 18 43.80	2.5295	S. 23 27 32.9	8.951

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 21 15.69	2.5334	S. 23 36 25.2	8.791
1	15 23 47.81	2.5371	23 45 7.8	8.628
2	15 26 20.14	2.5407	23 53 40.6	8.465
3	15 28 52.69	2.5442	24 2 3.6	8.301
4	15 31 25.45	2.5477	24 10 16.7	8.136
5	15 33 58.41	2.5510	24 18 19.9	7.970
6	15 36 31.57	2.5542	24 26 13.1	7.802
7	15 39 4.92	2.5574	24 33 56.2	7.634
8	15 41 38.46	2.5604	24 41 29.2	7.466
9	15 44 12.17	2.5633	24 48 52.1	7.297
10	15 46 46.06	2.5662	24 56 4.8	7.126
11	15 49 20.11	2.5688	25 3 7.2	6.953
12	15 51 54.32	2.5714	25 9 59.2	6.780
13	15 54 28.68	2.5738	25 16 40.8	6.608
14	15 57 3.18	2.5761	25 23 12.1	6.434
15	15 59 37.81	2.5782	25 29 32.9	6.258
16	16 2 12.57	2.5803	25 35 43.1	6.082
17	16 4 47.45	2.5822	25 41 42.8	5.907
18	16 7 22.44	2.5840	25 47 31.9	5.730
19	16 9 57.53	2.5857	25 53 10.4	5.552
20	16 12 32.72	2.5872	25 58 38.2	5.374
21	16 15 7.99	2.5884	26 3 55.3	5.196
22	16 17 43.33	2.5896	26 9 1.7	5.017
23	16 20 18.75	2.5908	26 13 57.4	4.838
24	16 22 54.23	2.5917	S. 26 18 42.3	4.658

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 22 54.23	2.5917	S. 26 18 42.3	4.658	0	18 25 32.12	2.4636	S. 26 37 20.4	3.676
1	16 25 29.76	2.5925	26 23 16.4	4.478	1	18 27 59.76	2.4578	26 33 35.2	3.830
2	16 28 5.33	2.5932	26 27 39.7	4.298	2	18 30 27.06	2.4520	26 29 40.8	3.982
3	16 30 40.94	2.5937	26 31 52.2	4.117	3	18 32 54.00	2.4460	26 25 37.3	4.134
4	16 33 16.57	2.5940	26 35 53.8	3.937	4	18 35 20.58	2.4399	26 21 24.7	4.285
5	16 35 52.22	2.5942	26 39 44.6	3.757	5	18 37 46.79	2.4337	26 17 3.1	4.434
6	16 38 27.87	2.5942	26 43 24.6	3.576	6	18 40 12.63	2.4275	26 12 32.6	4.583
7	16 41 3.52	2.5941	26 46 53.7	3.394	7	18 42 38.09	2.4213	26 7 53.2	4.730
8	16 43 39.16	2.5938	26 50 11.9	3.213	8	18 45 3.18	2.4150	26 3 5.0	4.875
9	16 46 14.78	2.5934	26 53 19.2	3.032	9	18 47 27.89	2.4086	25 58 8.2	5.019
10	16 48 50.37	2.5928	26 56 15.7	2.851	10	18 49 52.21	2.4020	25 53 2.8	5.162
11	16 51 25.92	2.5922	26 59 1.3	2.669	11	18 52 16.13	2.3954	25 47 48.8	5.304
12	16 54 1.43	2.5913	27 1 36.0	2.488	12	18 54 39.66	2.3888	25 42 26.3	5.444
13	16 56 36.88	2.5902	27 3 59.9	2.307	13	18 57 2.79	2.3822	25 36 55.5	5.582
14	16 59 12.26	2.5890	27 6 12.9	2.126	14	18 59 25.52	2.3754	25 31 16.4	5.720
15	17 1 47.56	2.5876	27 8 15.0	1.945	15	19 1 47.84	2.3687	25 25 29.1	5.857
16	17 4 22.77	2.5861	27 10 6.3	1.765	16	19 4 9.76	2.3619	25 19 33.6	5.991
17	17 6 57.89	2.5845	27 11 46.8	1.585	17	19 6 31.27	2.3550	25 13 30.2	6.123
18	17 9 32.91	2.5827	27 13 16.5	1.405	18	19 8 52.36	2.3481	25 7 18.9	6.254
19	17 12 7.82	2.5807	27 14 35.4	1.226	19	19 11 13.04	2.3412	25 0 59.7	6.386
20	17 14 42.60	2.5786	27 15 43.6	1.047	20	19 13 33.30	2.3342	24 54 32.6	6.516
21	17 17 17.25	2.5763	27 16 41.0	0.868	21	19 15 53.14	2.3272	24 47 57.8	6.643
22	17 19 51.76	2.5739	27 17 27.7	0.690	22	19 18 12.56	2.3201	24 41 15.4	6.769
23	17 22 26.12	2.5713	S. 27 18 3.8	0.512	23	19 20 31.55	2.3130	S. 24 34 25.5	6.894
	SATURDAY 18.					MONDAY 20.			
0	17 25 0.32	2.5687	S. 27 18 29.2	0.335	0	19 22 50.12	2.3060	S. 24 27 28.1	7.018
1	17 27 34.36	2.5658	27 18 44.0	−0.158	1	19 25 8.27	2.2988	24 20 23.3	7.141
2	17 30 8.22	2.5627	27 18 48.2	+0.017	2	19 27 25.98	2.2916	24 13 11.2	7.261
3	17 32 41.89	2.5596	27 18 41.9	0.192	3	19 29 43.26	2.2844	24 5 52.0	7.379
4	17 35 15.37	2.5563	27 18 25.1	0.367	4	19 32 0.11	2.2773	23 58 25.7	7.497
5	17 37 48.65	2.5529	27 17 57.9	0.541	5	19 34 16.54	2.2702	23 50 52.3	7.615
6	17 40 21.72	2.5493	27 17 20.2	0.715	6	19 36 32.54	2.2631	23 43 11.9	7.730
7	17 42 54.57	2.5456	27 16 32.1	0.887	7	19 38 48.11	2.2558	23 35 24.7	7.843
8	17 45 27.19	2.5417	27 15 33.8	1.058	8	19 41 3.24	2.2486	23 27 30.7	7.956
9	17 47 59.58	2.5377	27 14 25.2	1.228	9	19 43 17.94	2.2414	23 19 30.0	8.067
10	17 50 31.72	2.5336	27 13 6.4	1.399	10	19 45 32.21	2.2342	23 11 22.7	8.177
11	17 53 3.61	2.5294	27 11 37.3	1.569	11	19 47 46.04	2.2269	23 3 8.8	8.285
12	17 55 35.25	2.5251	27 9 58.1	1.737	12	19 49 59.44	2.2197	22 54 48.5	8.392
13	17 58 6.62	2.5205	27 8 8.9	1.904	13	19 52 12.41	2.2126	22 46 21.8	8.497
14	18 0 37.71	2.5159	27 6 9.6	2.071	14	19 54 24.95	2.2054	22 37 48.8	8.601
15	18 3 8.53	2.5112	27 4 0.4	2.236	15	19 56 37.06	2.1983	22 29 9.7	8.703
16	18 5 39.06	2.5063	27 1 41.3	2.400	16	19 58 48.74	2.1912	22 20 24.5	8.804
17	18 8 9.29	2.5013	26 59 12.4	2.562	17	20 1 0.00	2.1841	22 11 33.2	8.905
18	18 10 39.22	2.4962	26 56 33.8	2.724	18	20 3 10.83	2.1769	22 2 35.9	9.003
19	18 13 8.84	2.4911	26 53 45.5	2.886	19	20 5 21.23	2.1698	21 53 32.8	9.100
20	18 15 38.15	2.4858	26 50 47.5	3.047	20	20 7 31.21	2.1626	21 44 23.9	9.197
21	18 18 7.14	2.4804	26 47 39.9	3.206	21	20 9 40.77	2.1557	21 35 9.2	9.292
22	18 20 35.80	2.4749	26 44 22.8	3.363	22	20 11 49.90	2.1487	21 25 48.9	9.384
23	18 23 4.13	2.4693	26 40 56.3	3.520	23	20 13 58.62	2.1418	21 16 23.1	9.476
24	18 25 32.12	2.4636	S. 26 37 20.4	3.676	24	20 16 6.92	2.1348	S. 21 6 51.8	9.567

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 16 6.92	2.1348	S. 21 6 51.8	9.567
1	20 18 14.80	2.1279	20 57 15.1	9.656
2	20 20 22.27	2.1211	20 47 33.1	9.744
3	20 22 29.33	2.1142	20 37 45.8	9.831
4	20 24 35.98	2.1074	20 27 53.4	9.916
5	20 26 42.22	2.1006	20 17 55.9	10.001
6	20 28 48.05	2.0938	20 7 53.3	10.084
7	20 30 53.48	2.0872	19 57 45.8	10.166
8	20 32 58.51	2.0806	19 47 33.4	10.246
9	20 35 3.15	2.0740	19 37 16.3	10.324
10	20 37 7.39	2.0674	19 26 54.5	10.402
11	20 39 11.24	2.0609	19 16 28.0	10.480
12	20 41 14.70	2.0545	19 5 56.9	10.556
13	20 43 17.78	2.0481	18 55 21.3	10.630
14	20 45 20.47	2.0417	18 44 41.3	10.703
15	20 47 22.78	2.0354	18 33 57.0	10.775
16	20 49 24.72	2.0292	18 23 8.3	10.847
17	20 51 26.29	2.0230	18 12 15.4	10.916
18	20 53 27.48	2.0168	18 1 18.4	10.984
19	20 55 28.31	2.0108	17 50 17.3	11.052
20	20 57 28.78	2.0048	17 39 12.1	11.119
21	20 59 28.88	1.9988	17 28 3.0	11.184
22	21 1 28.63	1.9929	17 16 50.0	11.248
23	21 3 28.03	1.9871	S. 17 5 33.2	11.311

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 5 27.08	1.9813	S. 16 54 12.7	11.373
1	21 7 25.78	1.9755	16 42 48.5	11.434
2	21 9 24.14	1.9699	16 31 20.6	11.494
3	21 11 22.17	1.9643	16 19 49.2	11.553
4	21 13 19.86	1.9588	16 8 14.3	11.611
5	21 15 17.23	1.9534	15 56 35.9	11.667
6	21 17 14.27	1.9480	15 44 54.2	11.722
7	21 19 10.99	1.9427	15 33 9.2	11.777
8	21 21 7.39	1.9374	15 21 20.9	11.832
9	21 23 3.47	1.9322	15 9 29.3	11.886
10	21 24 59.25	1.9271	14 57 34.6	11.937
11	21 26 54.72	1.9220	14 45 36.9	11.987
12	21 28 49.89	1.9170	14 33 36.2	12.037
13	21 30 44.76	1.9121	14 21 32.5	12.086
14	21 32 39.34	1.9072	14 9 25.9	12.134
15	21 34 33.63	1.9024	13 57 16.4	12.182
16	21 36 27.63	1.8978	13 45 4.1	12.228
17	21 38 21.36	1.8932	13 32 49.1	12.273
18	21 40 14.81	1.8886	13 20 31.4	12.318
19	21 42 7.99	1.8841	13 8 11.0	12.361
20	21 44 0.90	1.8796	12 55 48.1	12.403
21	21 45 53.54	1.8752	12 43 22.7	12.444
22	21 47 45.93	1.8710	12 30 54.8	12.485
23	21 49 38.06	1.8668	12 18 24.5	12.525
24	21 51 29.94	1.8626	S. 12 5 51.8	12.564

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 51 29.94	1.8626	S. 12 5 51.8	12.564
1	21 53 21.57	1.8586	11 53 16.8	12.602
2	21 55 12.97	1.8547	11 40 39.5	12.640
3	21 57 4.13	1.8508	11 28 0.0	12.677
4	21 58 55.06	1.8469	11 15 18.3	12.712
5	22 0 45.76	1.8431	11 2 34.5	12.747
6	22 2 36.23	1.8394	10 49 48.6	12.782
7	22 4 26.49	1.8359	10 37 0.7	12.815
8	22 6 16.54	1.8323	10 24 10.8	12.847
9	22 8 6.37	1.8288	10 11 19.0	12.879
10	22 9 56.00	1.8255	9 58 25.3	12.910
11	22 11 45.43	1.8222	9 45 29.8	12.941
12	22 13 34.66	1.8189	9 32 32.4	12.971
13	22 15 23.70	1.8158	9 19 33.3	12.999
14	22 17 12.56	1.8127	9 6 32.6	13.026
15	22 19 1.23	1.8097	8 53 30.2	13.053
16	22 20 49.72	1.8068	8 40 26.2	13.080
17	22 22 38.04	1.8040	8 27 20.6	13.106
18	22 24 26.20	1.8012	8 14 13.5	13.131
19	22 26 14.19	1.7985	8 1 4.9	13.155
20	22 28 2.02	1.7958	7 47 54.9	13.178
21	22 29 49.69	1.7932	7 34 43.5	13.201
22	22 31 37.21	1.7908	7 21 30.8	13.223
23	22 33 24.59	1.7884	S. 7 8 16.7	13.246

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 35 11.82	1.7860	S. 6 55 1.3	13.267
1	22 36 58.91	1.7838	6 41 44.7	13.286
2	22 38 45.88	1.7817	6 28 27.0	13.305
3	22 40 32.72	1.7797	6 15 8.1	13.324
4	22 42 19.44	1.7777	6 1 48.1	13.342
5	22 44 6.04	1.7757	5 48 27.0	13.360
6	22 45 52.52	1.7738	5 35 4.9	13.377
7	22 47 38.89	1.7720	5 21 41.8	13.392
8	22 49 25.16	1.7703	5 8 17.8	13.407
9	22 51 11.33	1.7687	4 54 52.9	13.422
10	22 52 57.40	1.7671	4 41 27.1	13.436
11	22 54 43.38	1.7657	4 28 0.5	13.449
12	22 56 29.28	1.7643	4 14 33.2	13.462
13	22 58 15.10	1.7629	4 1 5.1	13.474
14	23 0 0.83	1.7616	3 47 36.3	13.486
15	23 1 46.49	1.7605	3 34 6.8	13.497
16	23 3 32.09	1.7594	3 20 36.7	13.506
17	23 5 17.62	1.7583	3 7 6.1	13.515
18	23 7 3.09	1.7573	2 53 34.9	13.524
19	23 8 48.50	1.7565	2 40 3.2	13.532
20	23 10 33.87	1.7557	2 26 31.0	13.540
21	23 12 19.19	1.7550	2 12 58.4	13.547
22	23 14 4.47	1.7543	1 59 25.4	13.553
23	23 15 49.71	1.7538	1 45 52.1	13.558
24	23 17 34.93	1.7534	S. 1 32 18.4	13.564

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.			
	h m s	s	° ′ ″	″
0	23 17 34.93	1.7534	S. 1 32 18.4	13.564
1	23 19 20.12	1.7530	1 18 44.4	13.568
2	23 21 5.29	1.7526	1 5 10.2	13.572
3	23 22 50.43	1.7523	0 51 35.8	13.574
4	23 24 35.56	1.7521	0 38 1.3	13.577
5	23 26 20.68	1.7520	0 24 26.6	13.579
6	23 28 5.80	1.7520	S. 0 10 51.8	13.581
7	23 29 50.92	1.7520	N. 0 2 43.1	13.581
8	23 31 36.04	1.7521	0 16 17.9	13.580
9	23 33 21.17	1.7523	0 29 52.7	13.579
10	23 35 6.31	1.7526	0 43 27.4	13.578
11	23 36 51.48	1.7530	0 57 2.0	13.576
12	23 38 36.67	1.7533	1 10 36.5	13.573
13	23 40 21.88	1.7538	1 24 10.8	13.570
14	23 42 7.13	1.7544	1 37 44.9	13.566
15	23 43 52.41	1.7550	1 51 18.7	13.561
16	23 45 37.73	1.7558	2 4 52.2	13.556
17	23 47 23.10	1.7566	2 18 25.4	13.550
18	23 49 8.52	1.7574	2 31 58.2	13.543
19	23 50 53.99	1.7583	2 45 30.6	13.536
20	23 52 39.52	1.7593	2 59 2.5	13.529
21	23 54 25.11	1.7604	3 12 34.0	13.521
22	23 56 10.77	1.7616	3 26 5.0	13.511
23	23 57 56.50	1.7628	N. 3 39 35.3	13.500
	SUNDAY 26.			
0	23 59 42.31	1.7642	N. 3 53 5.0	13.490
1	0 1 28.20	1.7655	4 6 34.1	13.479
2	0 3 14.17	1.7669	4 20 2.5	13.467
3	0 5 0.23	1.7685	4 33 30.2	13.455
4	0 6 46.39	1.7701	4 46 57.1	13.441
5	0 8 32.65	1.7717	5 0 23.1	13.427
6	0 10 19.00	1.7734	5 13 48.3	13.412
7	0 12 5.46	1.7753	5 27 12.6	13.397
8	0 13 52.04	1.7772	5 40 35.9	13.381
9	0 15 38.73	1.7792	5 53 58.3	13.365
10	0 17 25.54	1.7813	6 7 19.7	13.347
11	0 19 12.48	1.7834	6 20 40.0	13.328
12	0 20 59.55	1.7856	6 33 59.1	13.309
13	0 22 46.75	1.7878	6 47 17.1	13.290
14	0 24 34.09	1.7901	7 0 33.9	13.270
15	0 26 21.57	1.7925	7 13 49.5	13.249
16	0 28 9.19	1.7950	7 27 3.8	13.227
17	0 29 56.97	1.7976	7 40 16.7	13.204
18	0 31 44.90	1.8002	7 53 28.3	13.182
19	0 33 32.99	1.8029	8 6 38.5	13.158
20	0 35 21.25	1.8057	8 19 47.2	13.132
21	0 37 9.67	1.8084	8 32 54.3	13.106
22	0 38 58.26	1.8113	8 45 59.9	13.080
23	0 40 47.03	1.8143	8 59 3.9	13.053
24	0 42 35.98	1.8173	N. 9 12 6.3	13.026

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 27.			
	h m s	s	° ′ ″	″
0	0 42 35.98	1.8173	N. 9 12 6.3	13.026
1	0 44 25.11	1.8205	9 25 7.0	12.997
2	0 46 14.44	1.8237	9 38 5.9	12.967
3	0 48 3.96	1.8270	9 51 3.0	12.937
4	0 49 53.68	1.8303	10 3 58.3	12.905
5	0 51 43.60	1.8337	10 16 51.6	12.872
6	0 53 33.72	1.8371	10 29 43.0	12.840
7	0 55 24.05	1.8407	10 42 32.4	12.807
8	0 57 14.60	1.8443	10 55 19.8	12.773
9	0 59 5.36	1.8479	11 8 5.1	12.738
10	1 0 56.35	1.8517	11 20 48.3	12.702
11	1 2 47.56	1.8554	11 33 29.3	12.664
12	1 4 39.00	1.8592	11 46 8.0	12.626
13	1 6 30.67	1.8632	11 58 44.4	12.587
14	1 8 22.58	1.8672	12 11 18.4	12.547
15	1 10 14.74	1.8714	12 23 50.1	12.507
16	1 12 7.15	1.8755	12 36 19.3	12.466
17	1 13 59.80	1.8796	12 48 46.0	12.423
18	1 15 52.70	1.8838	13 1 10.1	12.380
19	1 17 45.86	1.8882	13 13 31.6	12.336
20	1 19 39.29	1.8927	13 25 50.4	12.291
21	1 21 32.98	1.8971	13 38 6.5	12.245
22	1 23 26.94	1.9016	13 50 19.8	12.197
23	1 25 21.17	1.9061	N.14 2 30.2	12.149
	TUESDAY 28.			
0	1 27 15.67	1.9108	N.14 14 37.7	12.101
1	1 29 10.46	1.9155	14 26 42.3	12.052
2	1 31 5.53	1.9202	14 38 43.9	12.000
3	1 33 0.88	1.9249	14 50 42.3	11.948
4	1 34 56.52	1.9298	15 2 37.6	11.895
5	1 36 52.46	1.9348	15 14 29.7	11.841
6	1 38 48.70	1.9398	15 26 18.5	11.786
7	1 40 45.24	1.9448	15 38 4.0	11.730
8	1 42 42.08	1.9499	15 49 46.1	11.673
9	1 44 39.23	1.9551	16 1 24.8	11.616
10	1 46 36.69	1.9603	16 13 0.0	11.557
11	1 48 34.46	1.9655	16 24 31.6	11.496
12	1 50 32.55	1.9708	16 35 59.5	11.435
13	1 52 30.96	1.9762	16 47 23.8	11.373
14	1 54 29.69	1.9816	16 58 44.3	11.309
15	1 56 28.75	1.9871	17 10 0.9	11.244
16	1 58 28.14	1.9926	17 21 13.6	11.179
17	2 0 27.86	1.9982	17 32 22.4	11.113
18	2 2 27.92	2.0038	17 43 27.2	11.046
19	2 4 28.31	2.0094	17 54 27.9	10.977
20	2 6 29.05	2.0151	18 5 24.4	10.907
21	2 8 30.13	2.0208	18 16 16.7	10.836
22	2 10 31.55	2.0266	18 27 4.7	10.763
23	2 12 33.32	2.0324	18 37 48.3	10.689
24	2 14 35.44	2.0383	N.18 48 27.4	10.615

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 14 35.44	2.0383	N.18 48 27.4	10.615
1	2 16 37.91	2.0442	18 59 2.1	10.540
2	2 18 40.74	2.0502	19 9 32.2	10.462
3	2 20 43.93	2.0561	19 19 57.6	10.384
4	2 22 47.47	2.0620	19 30 18.3	10.306
5	2 24 51.37	2.0681	19 40 34.3	10.226
6	2 26 55.64	2.0742	19 50 45.4	10.144
7	2 29 0.27	2.0802	20 0 51.5	10.061
8	2 31 5.27	2.0863	20 10 52.7	9.977
9	2 33 10.63	2.0924	20 20 48.8	9.892
10	2 35 16.36	2.0987	20 30 39.8	9.806
11	2 37 22.47	2.1049	20 40 25.5	9.718
12	2 39 28.95	2.1111	20 50 5.9	9 628
13	2 41 35.80	2.1173	20 59 40.9	9.538
14	2 43 43.03	2.1236	21 9 10.5	9.447
15	2 45 50.63	2.1298	21 18 34.6	9.355
16	2 47 58.61	2.1361	21 27 53.1	9.261
17	2 50 6.96	2.1424	21 37 5.9	9.166
18	2 52 15.70	2.1488	21 46 13.0	9.070
19	2 54 24.82	2.1551	21 55 14.3	8.972
20	2 56 34.31	2 1613	22 4 9.7	8.873
21	2 58 44.18	2.1677	22 12 59.1	8.773
22	3 0 54.43	2.1740	22 21 42.5	8.672
23	3 3 5.06	2.1803	N.22 30 19.7	8.569

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 5 16.07	2.1867	N.22 38 50.7	8.465
1	3 7 27.46	2.1930	22 47 15.5	8.360
2	3 9 39.23	2.1993	22 55 33.9	8.253
3	3 11 51.38	2.2057	23 3 45.9	8.146
4	3 14 3.91	2.2119	23 11 51.4	8.037
5	3 16 16.81	2.2182	23 19 50.3	7.927
6	3 18 30.09	2.2245	23 27 42.6	7.816
7	3 20 43.75	2.2307	23 35 28.2	7.702
8	3 22 57.78	2.2370	23 43 6.9	7.588
9	3 25 12.19	2.2432	23 50 38.8	7.474
10	3 27 26.97	2.2494	23 58 3.8	7.357
11	3 29 42.12	2.2557	24 5 21.7	7.239
12	3 31 57.65	2.2618	24 12 32.5	7.121
13	3 34 13.54	2.2678	24 19 36.2	7.001
14	3 36 29.79	2.2739	24 26 32.6	6.878
15	3 38 46.41	2.2800	24 33 21.6	6.755
16	3 41. 3.39	2.2860	24 40 3.2	6.632
17	3 43 20.73	2.2920	24 46 37.4	6.507
18	3 45 38.43	2.2979	24 53 4.1	6.381
19	3 47 56.48	2.3037	24 59 23.1	6.253
20	3 50 14.88	2.3096	25 5 34.4	6.124
21	3 52 33.63	2.3154	25 11 38.0	5.995
22	3 54 52.73	2.3212	25 17 33.8	5.864
23	3 57 12.17	2.3268	25 23 21.7	5.732
24	3 59 31.94	2.3323	N.25 29 1.6	5.598

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 59 31.94	2.3323	N.25 29 1.6	5.598
1	4 1 52.05	2.3379	25 34 33.4	5.463
2	4 4 12.49	2.3434	25 39 57.2	5.328
3	4 6 33.26	2.3488	25 45 12.8	5.191
4	4 8 54.35	2.3542	25 50 20.1	5.053
5	4 11 15.76	2.3594	25 55 19.1	4.914
6	4 13 37.48	2.3646	26 0 9.8	4.774
7	4 15 59.51	2.3697	26 4 52.0	4.633
8	4 18 21.85	2.3748	26 9 25.7	4.491
9	4 20 44.49	2.3798	26 13 50.9	4.348
10	4 23 7.43	2.3847	26 18 7.5	4.203
11	4 25 30.66	2.3895	26 22 15.3	4.057
12	4 27 54.17	2.3942	26 26 14.4	3.911
13	4 30 17.96	2.3988	26 30 4.7	3.764
14	4 32 42.03	2.4034	26 33 46.1	3.616
15	4 35 6.37	2.4078	26 37 18.6	3.467
16	4 37 30.97	2.4122	26 40 42.2	3.317
17	4 39 55.83	2.4164	26 43 56.7	3.165
18	4 42 20.94	2.4206	26 47 2.0	3.013
19	4 44 46.30	2.4246	26 49 58.2	2.861
20	4 47 11.89	2.4285	26 52 45.3	2.708
21	4 49 37.72	2.4324	26 55 23.2	2.554
22	4 52 3.78	2.4362	26 57 51.8	2.398
23	4 54 30.06	2.4398	N.27 0 11.0	2.242

SATURDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 56 56.55	2.4432	N.27 2 20.9	2.086

PHASES OF THE MOON.

		d	h	m
●	New Moon, . .	2	0	50.4
☽	First Quarter, . .	9	10	32.5
○	Full Moon, . . .	16	2	31.5
☾	Last Quarter, . .	23	13	41.8
●	New Moon, . .	31	13	47.7

		d	h
☾	Perigee, ...	13	11.4
☾	Apogee, ...	25	8.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
4	Sun	W.	23° 17′ 31″	3193	24° 43′ 48″	3173	26° 10′ 29″	3155	27° 37′ 32″	3138
	Pollux	E.	44 39 4	2775	43 4 3	2768	41 28 53	2761	39 53 34	2755
	Regulus	E.	81 26 31	2749	79 50 56	2741	78 15 10	2732	76 39 12	2723
5	Sun	W.	34 57 34	3065	36 26 26	3052	37 55 34	3040	39 24 57	3028
	Pollux	E.	31 54 58	2727	30 18 54	2723	28 42 45	2720	27 6 32	2719
	Regulus	E.	68 36 30	2679	66 59 22	2671	65 22 3	2662	63 44 32	2653
6	Sun	W.	46 55 34	2970	48 26 24	2958	49 57 29	2947	51 28 48	2936
	Regulus	E.	55 33 56	2608	53 55 12	2599	52 16 16	2591	50 37 8	2581
	Spica	E.	109 36 55	2611	107 58 15	2602	106 19 23	2593	104 40 18	2583
7	Sun	W.	59 8 51	2881	60 41 34	2871	62 14 30	2860	63 47 40	2849
	Mars	W.	15 9 9	2795	16 43 44	2775	18 18 44	2759	19 54 6	2743
	Regulus	E.	42 18 18	2536	40 37 55	2526	38 57 18	2517	37 16 28	2508
	Spica	E.	96 21 41	2537	94 41 19	2527	93 0 44	2518	91 19 56	2508
8	Sun	W.	71 37 0	2795	73 11 34	2785	74 46 22	2774	76 21 24	2763
	Mars	W.	27 55 30	2678	29 32 48	2666	31 10 13	2655	32 47 54	2643
	Regulus	E.	28 49 8	2462	27 7 1	2453	25 24 42	2444	23 42 10	2436
	Spica	E.	82 52 34	2460	81 10 25	2451	79 28 3	2441	77 45 27	2431
9	Sun	W.	84 20 5	2710	85 56 31	2699	87 33 12	2689	89 10 7	2679
	Mars	W.	41 0 5	2588	42 39 16	2578	44 18 41	2567	45 58 21	2556
	Pollux	W.	22 20 27	2465	24 2 30	2444	25 45 2	2425	27 28 1	2408
	Spica	E.	69 9 1	2383	67 25 2	2374	65 40 50	2364	63 56 24	2355
10	Sun	W.	97 18 5	2629	98 56 21	2618	100 34 51	2610	102 13 33	2600
	Mars	W.	54 20 17	2506	56 1 22	2496	57 42 41	2486	59 24 14	2477
	Pollux	W.	36 8 26	2339	37 53 29	2327	39 38 49	2316	41 24 25	2304
	Spica	E.	55 10 51	2309	53 25 4	2300	51 39 5	2291	49 52 53	2283
	Antares	E.	101 0 16	2302	99 14 20	2294	97 28 11	2285	95 41 49	2276
11	Sun	W.	110 30 11	2556	112 10 6	2548	113 50 12	2540	115 30 29	2534
	Mars	W.	67 55 12	2432	69 38 1	2424	71 21 2	2415	73 4 15	2408
	Pollux	W.	50 16 19	2256	52 3 24	2247	53 50 42	2238	55 38 13	2230
	Regulus	W.	13 14 1	2255	15 1 7	2243	16 48 31	2232	18 36 11	2223
	Spica	E.	40 58 52	2243	39 11 29	2237	37 23 56	2230	35 36 13	2224
	Antares	E.	86 46 47	2234	84 59 10	2226	83 11 21	2218	81 23 21	2211
12	Sun	W.	123 54 12	2502	125 35 22	2498	127 16 38	2494	128 58 0	2489
	Mars	W.	81 42 54	2374	83 27 6	2368	85 11 27	2362	86 55 56	2358
	Pollux	W.	64 38 39	2194	66 27 15	2188	68 16 0	2183	70 4 53	2178
	Regulus	W.	27 37 44	2184	29 26 35	2178	31 15 35	2172	33 4 44	2167
	Antares	E.	72 20 44	2179	70 31 45	2173	68 42 37	2168	66 53 21	2163
13	Mars	W.	95 39 55	2339	97 24 58	2336	99 10 5	2335	100 55 14	2333
	Pollux	W.	79 11 0	2159	81 0 29	2157	82 50 2	2155	84 39 38	2153
	Regulus	W.	42 12 13	2148	44 1 59	2146	45 51 48	2144	47 41 40	2142
	Antares	E.	57 45 26	2145	55 55 36	2143	54 5 43	2141	52 15 47	2141
14	Pollux	W.	93 47 51	2155	95 37 27	2157	97 27 0	2159	99 16 29	2162
	Regulus	W.	56 51 19	2143	58 41 12	2145	60 31 3	2147	62 20 51	2150

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
4	Sun	W.	29° 4′ 56″	3122	30° 32′ 39″	3107	32° 0′ 40″	3092	33° 28′ 59″	3079
	Pollux	E.	38 18 7	2748	36 42 31	2742	35 6 47	2737	33 30 56	2732
	Regulus	E.	75 3 3	2714	73 26 42	2706	71 50 10	2697	70 13 26	2688
5	Sun	W.	40 54 35	3016	42 24 28	3004	43 54 36	2993	45 24 58	2981
	Pollux	E.	25 30 18	2719	23 54 3	2720	22 17 50	2724	20 41 42	2731
	Regulus	E.	62 6 49	2644	60 28 54	2635	58 50 47	2626	57 12 28	2617
6	Sun	W.	53 0 21	2925	54 32 8	2915	56 4 8	2904	57 36 22	2892
	Regulus	E.	48 57 47	2572	47 18 14	2563	45 38 28	2553	43 58 29	2545
	Spica	E.	103 1 0	2574	101 21 29	2565	99 41 46	2556	98 1 50	2546
7	Sun	W.	65 21 4	2838	66 54 42	2828	68 28 34	2817	70 2 40	2806
	Mars	W.	21 29 49	2729	23 5 51	2716	24 42 10	2703	26 18 46	2690
	Regulus	E.	35 35 26	2499	33 54 11	2489	32 12 43	2480	30 31 2	2471
	Spica	E.	89 38 54	2499	87 57 39	2489	86 16 11	2480	84 34 29	2470
8	Sun	W.	77 56 40	2753	79 32 10	2742	81 7 54	2732	82 43 52	2720
	Mars	W.	34 25 50	2632	36 4 2	2621	37 42 28	2610	39 21 9	2599
	Regulus	E.	21 59 26	2427	20 16 30	2419	18 33 23	2412	16 50 5	2405
	Spica	E.	76 2 37	2422	74 19 34	2412	72 36 17	2403	70 52 46	2393
9	Sun	W.	90 47 15	2669	92 24 37	2658	94 2 13	2649	95 40 2	2638
	Mars	W.	47 38 16	2546	49 18 25	2536	50 58 48	2525	52 39 26	2516
	Pollux	W.	29 11 24	2393	30 55 9	2378	32 39 15	2364	34 23 41	2351
	Spica	E.	62 11 44	2346	60 26 51	2336	58 41 44	2327	56 56 24	2318
10	Sun	W.	103 52 28	2591	105 31 36	2582	107 10 56	2573	108 50 28	2565
	Mars	W.	61 6 0	2467	62 47 59	2458	64 30 11	2450	66 12 35	2441
	Pollux	W.	43 10 18	2294	44 56 27	2284	46 42 50	2274	48 29 28	2265
	Spica	E.	48 6 29	2274	46 19 52	2267	44 33 4	2259	42 46 4	2251
	Antares	E.	93 55 14	2267	92 8 26	2258	90 21 25	2250	88 34 12	2242
11	Sun	W.	117 10 55	2527	118 51 31	2520	120 32 16	2514	122 13 10	2508
	Mars	W.	74 47 38	2401	76 31 12	2394	78 14 56	2387	79 58 50	2380
	Pollux	W.	57 25 56	2223	59 13 50	2214	61 1 56	2207	62 50 13	2201
	Regulus	W.	20 24 5	2214	22 12 12	2205	24 0 32	2198	25 49 3	2191
	Spica	E.	33 48 21	2218	32 0 20	2213	30 12 12	2208	28 23 57	2204
	Antares	E.	79 35 10	2204	77 46 49	2197	75 58 17	2190	74 9 35	2184
12	Sun	W.	130 39 28	2486	132 21 1	2484	134 2 37	2482	135 44 16	2480
	Mars	W.	88 40 31	2353	90 25 13	2348	92 10 2	2345	93 54 56	2342
	Pollux	W.	71 53 54	2173	73 43 2	2169	75 32 16	2166	77 21 35	2162
	Regulus	W.	34 54 1	2163	36 43 25	2159	38 32 55	2155	40 22 31	2151
	Antares	E.	65 3 58	2159	63 14 29	2155	61 24 53	2151	59 35 12	2148
13	Mars	W.	102 40 25	2333	104 25 37	2332	106 10 50	2332	107 56 3	2333
	Pollux	W.	86 29 16	2153	88 18 55	2153	90 8 34	2153	91 58 13	2153
	Regulus	W.	49 31 35	2141	51 21 31	2141	53 11 27	2141	55 1 24	2142
	Antares	E.	50 25 50	2139	48 35 51	2139	46 45 52	2139	44 55 53	2139
14	Pollux	W.	101 5 54	2165	102 55 14	2170	104 44 27	2174	106 33 33	2180
	Regulus	W.	64 10 34	2153	66 0 12	2157	67 49 44	2161	69 39 10	2167

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Antares	E.	43° 5′ 54″	2141	41° 15′ 57″	2143	39° 26′ 4″	2145	37° 36′ 14″	2149
	α Aquilæ	E.	96 49 36	2805	95 15 14	2803	93 40 50	2802	92 6 25	2803
	Jupiter	E.	102 3 30	2152	100 13 50	2153	98 24 12	2155	96 34 37	2159
15	Regulus	W.	71 28 28	2172	73 17 38	2178	75 6 38	2185	76 55 28	2192
	Spica	W.	17 33 32	2212	19 21 42	2211	21 9 53	2213	22 58 1	2216
	Antares	E.	28 28 26	2170	26 39 14	2177	24 50 12	2184	23 1 20	2190
	α Aquilæ	E.	84 15 25	2835	82 41 42	2846	81 8 14	2859	79 35 3	2875
	Jupiter	E.	87 28 3	2180	85 39 5	2186	83 50 17	2193	82 1 39	2200
16	Regulus	W.	85 56 45	2235	87 44 20	2245	89 31 40	2256	91 18 44	2268
	Spica	W.	31 56 58	2248	33 44 14	2257	35 31 17	2266	37 18 6	2277
	α Aquilæ	E.	71 54 45	2978	70 24 5	3005	68 53 58	3031	67 24 27	3066
	Jupiter	E.	73 1 20	2243	71 13 56	2253	69 26 47	2264	67 39 54	2274
17	Regulus	W.	100 9 45	2329	101 55 2	2343	103 39 59	2357	105 24 36	2371
	Spica	W.	46 8 8	2335	47 53 16	2349	49 38 4	2362	51 22 33	2376
	Jupiter	E.	58 49 53	2336	57 4 36	2349	55 19 48	2363	53 35 20	2378
	α Aquilæ	E.	60 7 36	3265	58 42 43	3313	57 18 47	3366	55 55 52	3423
	Fomalhaut	E.	82 35 32	2675	80 58 18	2692	79 21 28	2710	77 45 2	2729
	α Pegasi	E.	104 15 40	2521	102 34 56	2532	100 54 27	2543	99 14 14	2556
	Saturn	E.	111 39 47	2378	109 55 40	2391	108 11 52	2405	106 28 24	2418
18	Spica	W.	59 59 51	2450	61 42 15	2465	63 24 17	2481	65 5 57	2497
	Antares	W.	14 6 26	2444	15 48 58	2460	17 31 7	2476	19 12 54	2492
	Jupiter	E.	44 58 12	2451	43 15 50	2467	41 33 51	2483	39 52 14	2499
	α Aquilæ	E.	49 18 53	3782	48 3 32	3872	46 49 44	3970	45 37 35	4077
	Fomalhaut	E.	69 49 32	2839	68 15 55	2864	66 42 50	2891	65 10 19	2919
	α Pegasi	E.	90 57 40	2626	89 19 21	2642	87 41 23	2658	86 3 47	2675
	Saturn	E.	97 56 5	2492	96 14 41	2507	94 33 38	2523	92 52 57	2540
19	Spica	W.	73 28 42	2577	75 8 8	2594	76 47 11	2610	78 25 52	2627
	Antares	W.	27 36 12	2573	29 15 44	2590	30 54 53	2606	32 33 40	2623
	Jupiter	E.	31 29 43	2580	29 50 20	2596	28 11 20	2612	26 32 42	2629
	Fomalhaut	E.	57 37 1	3077	56 8 23	3113	54 40 29	3152	53 13 22	3192
	α Pegasi	E.	78 1 32	2765	76 26 18	2783	74 51 28	2802	73 17 3	2823
	Saturn	E.	84 35 10	2621	82 56 44	2638	81 18 41	2655	79 41 1	2672
	Venus	E.	97 17 2	2958	95 45 57	2976	94 15 14	2994	92 44 54	3012
20	Spica	W.	86 33 46	2707	88 10 16	2723	89 46 25	2739	91 22 13	2754
	Antares	W.	40 42 3	2703	42 18 39	2719	43 54 54	2735	45 30 48	2750
	Fomalhaut	E.	46 10 40	3434	44 49 2	3492	43 28 29	3555	42 9 6	3623
	α Pegasi	E.	65 31 36	2927	63 59 51	2949	62 28 34	2971	60 57 45	2994
	Saturn	E.	71 38 14	2754	70 2 46	2771	68 27 40	2788	66 52 56	2803
	Venus	E.	85 18 49	3102	83 50 42	3120	82 22 57	3138	80 55 33	3156
	α Arietis	E.	107 18 32	2721	105 42 20	2737	104 6 29	2752	102 30 58	2767
	SUN	E.	130 27 36	3069	128 58 48	3085	127 30 20	3101	126 2 11	3116
21	Antares	W.	53 25 18	2824	54 59 15	2838	56 32 53	2852	58 6 14	2865
	α Pegasi	E.	53 30 59	3117	52 3 10	3143	50 35 53	3171	49 9 9	3200
	Saturn	E.	59 4 22	2881	57 31 39	2897	55 59 16	2912	54 27 12	2926
	Venus	E.	73 43 44	3240	72 18 22	3256	70 53 19	3272	69 28 35	3287
	α Arietis	E.	94 38 18	2840	93 4 42	2855	91 31 25	2868	89 58 25	2882

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Antares	E.	35° 46′ 29″	2152	33° 56′ 49″	2155	32° 7′ 14″	2160	30° 17′ 46″	2165
	α Aquilæ	E.	90 32 1	2806	88 57 41	2811	87 23 27	2817	85 49 21	2825
	Jupiter	E.	94 45 7	2162	92 55 42	2165	91 6 22	2170	89 17 9	2174
15	Regulus	W.	78 44 8	2199	80 32 37	2208	82 20 53	2216	84 8 56	2226
	Spica	W.	24 46 5	2220	26 34 2	2226	28 21 51	2233	30 9 30	2240
	Antares	E.	21 12 38	2198	19 24 8	2206	17 35 50	2215	15 47 45	2225
	α Aquilæ	E.	78 2 12	2891	76 29 42	2910	74 57 36	2931	73 25 56	2954
	Jupiter	E.	80 13 11	2207	78 24 54	2216	76 36 50	2224	74 48 58	2233
16	Regulus	W.	93 5 31	2279	94 52 1	2291	96 38 14	2303	98 24 9	2316
	Spica	W.	39 4 39	2287	40 50 57	2299	42 36 58	2311	44 22 42	2323
	α Aquilæ	E.	65 55 36	3100	64 27 26	3137	63 0 1	3176	61 33 23	3219
	Jupiter	E.	65 53 17	2286	64 6 57	2298	62 20 54	2310	60 35 9	2323
17	Regulus	W.	107 8 53	2385	108 52 49	2400	110 36 24	2415	112 19 37	2431
	Spica	W.	53 6 42	2390	54 50 31	2405	56 33 59	2419	58 17 6	2435
	Jupiter	E.	51 51 13	2391	50 7 26	2406	48 24 0	2421	46 40 55	2436
	α Aquilæ	E.	54 34 2	3484	53 13 20	3551	51 53 52	3622	50 35 41	3699
	Fomalhaut	E.	76 9 1	2749	74 33 26	2770	72 58 19	2792	71 23 40	2815
	α Pegasi	E.	97 34 18	2569	95 54 40	2582	94 15 20	2596	92 36 20	2611
	Saturn	E.	104 45 15	2432	103 2 26	2447	101 19 58	2462	99 37 51	2477
18	Spica	W.	66 47 15	2512	68 28 11	2529	70 8 44	2545	71 48 54	2561
	Antares	W.	20 54 19	2508	22 35 21	2524	24 16 1	2540	25 56 18	2557
	Jupiter	E.	38 10 59	2515	36 30 6	2531	34 49 36	2547	33 9 28	2564
	α Aquilæ	E.	44 27 11	4194	43 18 39	4321	42 12 6	4460	41 7 39	4614
	Fomalhaut	E.	63 38 24	2947	62 7 5	2977	60 36 24	3009	59 6 22	3042
	α Pegasi	E.	84 26 33	2692	82 49 42	2710	81 13 15	2727	79 37 11	2746
	Saturn	E.	91 12 39	2556	89 32 43	2572	87 53 9	2588	86 13 58	2605
19	Spica	W.	80 4 10	2643	81 42 6	2659	83 19 41	2675	84 56 54	2691
	Antares	W.	34 12 4	2639	35 50 6	2655	37 27 47	2671	39 5 6	2687
	Jupiter	E.	24 54 26	2645	23 16 32	2661	21 39 0	2678	20 1 50	2693
	Fomalhaut	E.	51 47 3	3235	50 21 35	3280	48 57 0	3328	47 33 21	3379
	α Pegasi	E.	71 43 5	2843	70 9 33	2863	68 36 27	2884	67 3 48	2905
	Saturn	E.	78 3 43	2688	76 26 47	2705	74 50 14	2722	73 14 3	2738
	Venus	E.	91 14 56	3030	89 45 21	3048	88 16 8	3067	86 47 18	3084
20	Spica	W.	92 57 41	2769	94 32 49	2785	96 7 37	2800	97 42 5	2814
	Antares	W.	47 6 21	2766	48 41 34	2780	50 16 28	2795	51 51 2	2809
	Fomalhaut	E.	40 50 56	3696	39 34 5	3777	38 18 39	3864	37 4 43	3960
	α Pegasi	E.	59 27 25	3018	57 57 34	3041	56 28 12	3065	54 59 20	3091
	Saturn	E.	65 18 32	2819	63 44 29	2835	62 10 47	2851	60 37 25	2866
	Venus	E.	79 28 31	3173	78 1 49	3189	76 35 27	3207	75 9 26	3223
	α Arietis	E.	100 55 47	2782	99 20 56	2797	97 46 24	2812	96 12 12	2826
	Sun	E.	124 34 21	3132	123 6 50	3148	121 39 38	3163	120 12 44	3178
21	Antares	W.	59 39 18	2878	61 12 5	2891	62 44 36	2903	64 16 51	2915
	α Pegasi	E.	47 43 0	3230	46 17 26	3261	44 52 29	3294	43 28 10	3328
	Saturn	E.	52 55 26	2940	51 23 58	2955	49 52 49	2969	48 21 57	2982
	Venus	E.	68 4 8	3302	66 39 59	3318	65 16 8	3332	63 52 34	3346
	α Arietis	E.	88 25 43	2894	86 53 17	2907	85 21 7	2920	83 49 13	2931

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	Sun	E.	118° 46′ 8″	3193	117° 19′ 50″	3207	115° 53′ 49″	3221	114° 28′ 5″	3236
22	Antares	W.	65 48 51	2927	67 20 36	2938	68 52 7	2948	70 23 25	2959
	Saturn	E.	46 51 22	2997	45 21 5	3009	43 51 4	3022	42 21 19	3036
	Venus	E.	62 29 16	3360	61 6 14	3374	59 43 28	3387	58 20 57	3400
	α Arietis	E.	82 17 34	2943	80 46 10	2954	79 15 0	2965	77 44 4	2977
	Sun	E.	107 23 26	3300	105 59 15	3313	104 35 18	3324	103 11 34	3334
23	Antares	W.	77 56 48	3004	79 26 56	3012	80 56 54	3019	82 26 43	3026
	α Aquilæ	W.	37 38 5	5494	38 28 53	5336	39 21 34	5193	40 16 1	5066
	Jupiter	W.	18 48 6	3007	20 18 10	3015	21 48 4	3022	23 17 50	3029
	Saturn	E.	34 56 38	3101	33 28 30	3114	32 0 38	3128	30 33 2	3143
	Venus	E.	51 31 53	3460	50 10 44	3471	48 49 47	3480	47 29 1	3491
	α Arietis	E.	70 12 33	3022	68 42 48	3031	67 13 14	3039	65 43 50	3046
	Sun	E.	96 15 53	3383	94 53 17	3392	93 30 51	3399	92 8 33	3407
24	Antares	W.	89 53 52	3053	91 22 59	3056	92 52 2	3060	94 21 0	3064
	α Aquilæ	W.	45 10 27	4585	46 13 5	4514	47 16 45	4448	48 21 23	4387
	Jupiter	W.	30 44 46	3054	32 13 52	3059	33 42 52	3062	35 11 48	3065
	Venus	E.	40 47 57	3538	39 28 15	3547	38 8 43	3556	36 49 21	3565
	α Arietis	E.	58 18 50	3076	56 50 11	3081	55 21 38	3086	53 53 11	3089
	Sun	E.	85 18 59	3436	83 57 23	3440	82 35 52	3444	81 14 25	3447
25	α Aquilæ	W.	53 57 1	4149	55 6 16	4110	56 16 8	4073	57 26 36	4039
	Jupiter	W.	42 35 50	3072	44 4 34	3072	45 33 18	3071	47 2 3	3070
	Venus	E.	30 15 1	3614	28 56 42	3625	27 38 35	3638	26 20 42	3652
	α Arietis	E.	46 31 56	3103	45 3 50	3105	43 35 47	3107	42 7 46	3108
	Sun	E.	74 27 55	3456	73 6 42	3457	71 45 30	3456	70 24 17	3456
26	α Aquilæ	W.	63 26 34	3899	64 39 55	3875	65 53 40	3853	67 7 48	3831
	Jupiter	W.	54 26 15	3059	55 55 15	3056	57 24 19	3052	58 53 28	3047
	Fomalhaut	W.	37 53 57	4083	39 4 15	4016	40 15 39	3955	41 28 3	3899
	α Arietis	E.	34 48 0	3113	33 20 6	3114	31 52 14	3115	30 24 23	3117
	Sun	E.	63 37 54	3446	62 16 30	3443	60 55 2	3439	59 33 30	3435
27	α Aquilæ	W.	73 23 44	3736	74 39 53	3719	75 56 20	3704	77 13 3	3688
	Jupiter	W.	66 20 41	3020	67 50 29	3014	69 20 25	3007	70 50 29	2999
	Fomalhaut	W.	47 42 57	3678	49 0 7	3642	50 17 56	3609	51 36 21	3578
	α Pegasi	W.	25 57 13	4133	27 6 43	4019	28 18 4	3919	29 31 5	3830
	Sun	E.	52 44 32	3409	51 22 26	3404	50 0 14	3397	48 37 54	3391
28	α Aquilæ	W.	83 40 32	3621	84 58 44	3609	86 17 9	3597	87 35 47	3587
	Jupiter	W.	78 23 13	2959	79 54 17	2950	81 25 32	2942	82 56 58	2932
	Fomalhaut	W.	58 16 25	3443	59 37 53	3420	60 59 47	3398	62 22 6	3376
	α Pegasi	W.	35 55 55	3515	37 16 2	3469	38 37 1	3427	39 58 47	3388
	Saturn	W.	25 15 58	3102	26 44 5	3082	28 12 36	3064	29 41 30	3047
	Sun	E.	41 44 17	3354	40 21 8	3347	38 57 51	3339	37 34 25	3332
29	Jupiter	W.	90 37 11	2883	92 9 52	2873	93 42 46	2862	95 15 54	2852
	Fomalhaut	W.	69 19 38	3279	70 44 14	3262	72 9 10	3245	73 34 26	3228
	α Pegasi	W.	46 57 47	3230	48 23 21	3204	49 49 26	3178	51 16 1	3154
	Saturn	W.	37 11 3	2969	38 41 54	2956	40 13 2	2942	41 44 27	2928
	Sun	E.	30 35 6	3297	29 10 51	3290	27 46 28	3285	26 21 59	3281

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
21	Sun	E.	113° 2′ 38″	3249	111° 37′ 27″	3263	110° 12′ 32″	3276	108° 47′ 52″	3288
22	Antares	W.	71 54 29	2969	73 25 21	2978	74 56 1	2987	76 26 30	2996
	Saturn	E.	40 51 51	3049	39 22 39	3062	37 53 43	3074	36 25 2	3088
	Venus	E.	56 58 40	3413	55 36 38	3425	54 14 50	3437	52 53 15	3448
	α Arietis	E.	76 13 22	2986	74 42 52	2996	73 12 34	3005	71 42 28	3014
	Sun	E.	101 48 2	3345	100 24 43	3355	99 1 35	3365	97 38 39	3374
23	Antares	W.	83 56 23	3032	85 25 56	3038	86 55 22	3044	88 24 40	3049
	α Aquilæ	W.	41 12 5	4950	42 9 40	4845	43 8 39	4750	44 8 57	4664
	Jupiter	W.	24 47 27	3035	26 16 56	3040	27 46 19	3046	29 15 35	3050
	Saturn	E.	29 5 44	3158	27 38 44	3173	26 12 2	3190	24 45 41	3209
	Venus	E.	46 8 27	3501	44 48 4	3510	43 27 51	3520	42 7 49	3529
	α Arietis	E.	64 14 34	3053	62 45 27	3059	61 16 27	3065	59 47 35	3071
	Sun	E.	90 46 24	3413	89 24 22	3420	88 2 28	3425	86 40 40	3431
24	Antares	W.	95 49 54	3066	97 18 45	3068	98 47 34	3069	100 16 21	3071
	α Aquilæ	W.	49 26 56	4332	50 33 19	4280	51 40 30	4233	52 48 25	4189
	Jupiter	W.	36 40 41	3067	38 9 31	3069	39 38 19	3070	41 7 5	3071
	Venus	E.	35 30 9	3574	34 11 6	3584	32 52 14	3593	31 33 32	3603
	α Arietis	E.	52 24 48	3093	50 56 30	3096	49 28 15	3099	48 0 4	3101
	Sun	E.	79 53 2	3450	78 31 42	3452	77 10 24	3454	75 49 9	3455
25	α Aquilæ	W.	58 37 37	4008	59 49 9	3978	61 1 10	3950	62 13 39	3924
	Jupiter	W.	48 30 49	3069	49 59 36	3067	51 28 26	3065	52 57 19	3062
	Venus	E.	25 3 4	3669	23 45 44	3688	22 28 44	3710	21 12 8	3738
	α Arietis	E.	40 39 46	3110	39 11 48	3110	37 43 51	3111	36 15 55	3112
	Sun	E.	69 3 4	3454	67 41 49	3454	66 20 33	3452	64 59 15	3449
26	α Aquilæ	W.	68 22 18	3810	69 37 10	3791	70 52 22	3772	72 7 53	3753
	Jupiter	W.	60 22 42	3043	61 52 2	3038	63 21 28	3032	64 51 1	3026
	Fomalhaut	W.	42 41 24	3848	43 55 37	3800	45 10 39	3756	46 26 27	3716
	α Arietis	E.	28 56 34	3119	27 28 48	3122	26 1 5	3126	24 33 27	3131
	Sun	E.	58 11 53	3431	56 50 11	3426	55 28 24	3421	54 6 31	3415
27	α Aquilæ	W.	78 30 3	3674	79 47 18	3660	81 4 48	3646	82 22 33	3633
	Jupiter	W.	72 20 43	2992	73 51 6	2985	75 21 38	2977	76 52 20	2968
	Fomalhaut	W.	52 55 19	3548	54 14 50	3519	55 34 53	3493	56 55 25	3468
	α Pegasi	W.	30 45 36	3752	32 1 28	3684	33 18 32	3622	34 36 43	3565
	Sun	E.	47 15 27	3384	45 52 52	3377	44 30 9	3369	43 7 17	3362
28	α Aquilæ	W.	88 54 36	3576	90 13 36	3566	91 32 47	3558	92 52 7	3550
	Jupiter	W.	84 28 36	2923	86 0 26	2913	87 32 28	2903	89 4 43	2893
	Fomalhaut	W.	63 44 50	3355	65 7 58	3335	66 31 29	3315	67 55 23	3297
	α Pegasi	W.	41 21 17	3351	42 44 29	3319	44 8 19	3287	45 32 46	3258
	Saturn	W.	31 10 45	3030	32 40 21	3014	34 10 16	2999	35 40 30	2984
	Sun	E.	36 10 50	3324	34 47 6	3317	33 23 14	3310	31 59 14	3303
29	Jupiter	W.	96 49 15	2841	98 22 50	2830	99 56 39	2819	101 30 42	2808
	Fomalhaut	W.	75 0 2	3212	76 25 57	3197	77 52 10	3182	79 18 41	3168
	α Pegasi	W.	52 43 5	3132	54 10 36	3110	55 38 34	3089	57 6 57	3069
	Saturn	W.	43 16 10	2915	44 48 10	2902	46 20 26	2889	47 52 59	2876
	Sun	E.	24 57 25	3278	23 32 48	3276	22 8 9	3277	20 43 31	3281

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	4 36 53.14	10.236	N.22 4 55.8	+20.29	15 48.29	68.42	2 27.04	0.379
Sun.	2	4 40 59.01	10.252	22 12 51.2	19.32	15 48.16	68.47	2 17.75	0.395
Mon.	3	4 45 5.25	10.267	22 20 23.4	18.35	15 48.04	68.52	2 8.09	0.410
Tues.	4	4 49 11.85	10.281	22 27 32.1	17.37	15 47.92	68.57	1 58.08	0.424
Wed.	5	4 53 18.78	10.295	22 34 17.3	16.38	15 47.80	68.62	1 47.73	0.438
Thur.	6	4 57 26.03	10.307	22 40 38.7	15.39	15 47.69	68.66	1 37.06	0.452
Frid.	7	5 1 33.57	10.319	22 46 36.2	14.40	15 47.58	68.70	1 26.11	0.462
Sat.	8	5 5 41.39	10.330	22 52 9.8	13.40	15 47.48	68.74	1 14.89	0.473
Sun.	9	5 9 49.45	10.340	22 57 19.4	12.39	15 47.38	68.78	1 3.41	0.483
Mon.	10	5 13 57.75	10.349	23 2 4.7	11.38	15 47.28	68.81	0 51.70	0.492
Tues.	11	5 18 6.26	10.358	23 6 25.5	10.36	15 47.19	68.84	0 39.78	0.501
Wed.	12	5 22 14.97	10.366	23 10 22.1	9.35	15 47.10	68.87	0 27.67	0.508
Thur.	13	5 26 23.83	10.373	23 13 54.4	8.33	15 47.02	68.90	0 15.39	0.515
Frid.	14	5 30 32.86	10.379	23 17 2.0	7.31	15 46.94	68.92	0 2.96	0.521
Sat.	15	5 34 42.03	10.384	23 19 44.9	6.28	15 46.86	68.94	0 9.61	0.526
Sun.	16	5 38 51.32	10.388	23 22 3.3	5.26	15 46.78	68.96	0 22.30	0.530
Mon.	17	5 43 0.70	10.392	23 23 57.1	4.23	15 46.71	68.97	0 35.10	0.534
Tues.	18	5 47 10.16	10.394	23 25 26.2	3.20	15 46.64	68.98	0 47.97	0.537
Wed.	19	5 51 19.67	10.397	23 26 30.5	2.16	15 46.57	68.98	1 0.89	0.539
Thur.	20	5 55 29.22	10.398	23 27 9.9	1.13	15 46.51	68.98	1 13.84	0.540
Frid.	21	5 59 38.80	10.398	23 27 24.5	+ 0.09	15 46.45	68.98	1 26.82	0.541
Sat.	22	6 3 48.38	10.397	23 27 14.3	− 0.94	15 46.40	68.97	1 39.81	0.540
Sun.	23	6 7 57.92	10.396	23 26 39.3	1.97	15 46.35	68.96	1 52.76	0.539
Mon.	24	6 12 7.40	10.393	23 25 39.4	3.00	15 46.30	68.95	2 5.64	0.536
Tues.	25	6 16 16.82	10.390	23 24 14.8	4.04	15 46.26	68.93	2 18.46	0.532
Wed.	26	6 20 26.14	10.385	23 22 25.4	5.07	15 46.23	68.91	2 31.19	0.527
Thur.	27	6 24 35.33	10.379	23 20 11.2	6.10	15 46.20	68.89	2 43.79	0.521
Frid.	28	6 28 44.36	10.371	23 17 32.4	7.12	15 46.17	68.87	2 56.22	0.514
Sat.	29	6 32 53.20	10.363	23 14 29.2	8.14	15 46.15	68.84	3 8.47	0.506
Sun.	30	6 37 1.83	10.354	23 11 1.5	9.16	15 46.14	68.81	3 20.51	0.497
Mon.	31	6 41 10.23	10.344	N.23 7 9.4	−10.17	15 46.13	68.78	3 32.33	0.487

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0ˢ.19 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to* / *subtracted from* *Mean Time*.	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	4 36 53.56	10.235	N.22 4 56.7	+20.29	2 27.02	0.379	4 39 20.58
Sun.	2	4 40 59.41	10.251	22 12 51.9	19.32	2 17.73	0.395	4 43 17.14
Mon.	3	4 45 5.62	10.266	22 20 24.0	18.35	2 8.07	0.410	4 47 13.69
Tues.	4	4 49 12.19	10.280	22 27 32.7	17.37	1 58.06	0.424	4 51 10.25
Wed.	5	4 53 19.10	10.294	22 34 17.8	16.38	1 47.71	0.438	4 55 6.81
Thur.	6	4 57 26.32	10.306	22 40 39.1	15.39	1 37.05	0.452	4 59 3.37
Frid.	7	5 1 33.83	10.318	22 46 36.6	14.40	1 26.10	0.462	5 2 59.93
Sat.	8	5 5 41.61	10.329	22 52 10.2	13.40	1 14.88	0.473	5 6 56.49
Sun.	9	5 9 49.64	10.339	22 57 19.6	12.39	1 3.40	0.483	5 10 53.04
Mon.	10	5 13 57.91	10.348	23 2 4.8	11.38	0 51.69	0.492	5 14 49.60
Tues.	11	5 18 6.93	10.357	23 6 25.6	10.36	0 39.77	0.501	5 18 46.16
Wed.	12	5 22 15.06	10.365	23 10 22.2	9.35	0 27.66	0.508	5 22 42.72
Thur.	13	5 26 23.89	10.372	23 13 54.4	8.33	0 15.39	0.515	5 26 39.28
Frid.	14	5 30 32.88	10.378	23 17 2.0	7.31	0 2.96	0.521	5 30 35.84
Sat.	15	5 34 42.01	10.383	23 19 44.9	6.28	0 9.61	0.526	5 34 32.40
Sun.	16	5 38 51.26	10.387	23 22 3.3	5.26	0 22.30	0.530	5 38 28.96
Mon.	17	5 43 0.60	10.391	23 23 57.1	4.23	0 35.09	0.534	5 42 25.51
Tues.	18	5 47 10.03	10.394	23 25 26.2	3.20	0 47.96	0.537	5 46 22.07
Wed.	19	5 51 19.51	10.396	23 26 30.5	2.16	1 0.88	0.539	5 50 18.63
Thur.	20	5 55 29.02	10.397	23 27 9.9	1.13	1 13.83	0.540	5 54 15.19
Frid.	21	5 59 38.56	10.397	23 27 24.5	+ 0.09	1 26.81	0.541	5 58 11.75
Sat.	22	6 3 48.10	10.396	23 27 14.3	– 0.94	1 39.79	0.540	6 2 8.31
Sun.	23	6 7 57.60	10.395	23 26 39.3	1.97	1 52.74	0.539	6 6 4.86
Mon.	24	6 12 7.04	10.392	23 25 39.5	3.00	2 5.62	0.536	6 10 1.42
Tues.	25	6 16 16.42	10.389	23 24 14.9	4.04	2 18.44	0.532	6 13 57.98
Wed.	26	6 20 25.71	10.384	23 22 25.6	5.07	2 31.17	0.527	6 17 54.54
Thur.	27	6 24 34.87	10.378	23 20 11.5	6.10	2 43.77	0.521	6 21 51.10
Frid.	28	6 28 43.86	10.370	23 17 32.8	7.12	2 56.20	0.514	6 25 47.66
Sat.	29	6 32 52.66	10.362	23 14 29.6	8.14	3 8.44	0.506	6 29 44.22
Sun.	30	6 37 1.26	10.353	23 11 2.0	9.16	3 20.48	0.497	6 33 40.78
Mon.	31	6 41 9.63	10.343	N.23 7 10.0	–10.17	3 32.30	0.487	6 37 37.33

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

– prefixed to the hourly change of declination indicates that the north declinations are decreasing.

Diff. for 1 hour.
+9ˢ.8565
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	152	70 48 54.9	48 23.0	143.71	+0.52	0.0062352	+25.5	19 17 29.27
2	153	71 46 23.3	45 51.2	143.66	0.43	.0062952	24.5	19 13 33.36
3	154	72 43 50.7	43 18.4	143.62	0.33	.0063528	23.5	19 9 37.45
4	155	73 41 17.1	40 44.7	143.56	0.21	.0064080	22.5	19 5 41.54
5	156	74 38 42.3	38 9.7	143.52	+0.08	.0064609	21.6	19 1 45.63
6	157	75 36 6.3	35 33.5	143.48	−0.05	.0065117	20.8	18 57 49.72
7	158	76 33 29.2	32 56.2	143.44	0.17	.0065605	19.9	18 53 53.81
8	159	77 30 51.2	30 18.0	143.40	0.28	.0066074	19.1	18 49 57.89
9	160	78 28 12.2	27 38.8	143.35	0.38	.0066524	18.5	18 46 1.98
10	161	79 25 32.1	24 58.5	143.31	0.45	.0066958	17.8	18 42 6.07
11	162	80 22 51.0	22 17.2	143.27	0.49	.0067376	17.1	18 38 10.15
12	163	81 20 9.1	19 35.1	143.24	0.50	.0067779	16.5	18 34 14.23
13	164	82 17 26.4	16 52.2	143.20	0.47	.0068167	15.9	18 30 18.32
14	165	83 14 42.9	14 8.6	143.17	0.41	.0068541	15.3	18 26 22.41
15	166	84 11 58.8	11 24.3	143.15	0.34	.0068900	14.7	18 22 26.49
16	167	85 9 14.1	8 39.4	143.13	0.25	.0069245	14.1	18 18 30.59
17	168	86 6 29.0	5 54.1	143.11	−0.13	.0069578	13.6	18 14 34.67
18	169	87 3 43.5	3 8.4	143.10	+0.01	.0069896	13.0	18 10 38.76
19	170	88 0 57.6	0 22.4	143.08	0.15	.0070200	12.3	18 6 42.85
20	171	88 58 11.5	57 36.1	143.07	0.28	.0070488	11.6	18 2 46.93
21	172	89 55 25.2	54 49.6	143.07	0.41	.0070759	10.9	17 58 51.02
22	173	90 52 38.9	52 3.1	143.07	0.53	.0071010	10.0	17 54 55.11
23	174	91 49 52.6	49 16.6	143.07	0.62	.0071241	9.1	17 50 59.20
24	175	92 47 6.2	46 30.1	143.06	0.68	.0071450	8.3	17 47 3.28
25	176	93 44 19.8	43 43.5	143.06	0.71	.0071637	7.4	17 43 7.37
26	177	94 41 33.4	40 56.9	143.06	0.71	.0071801	6.4	17 39 11.46
27	178	95 38 47.0	38 10.3	143.06	0.68	.0071940	5.3	17 35 15.54
28	179	96 36 0.6	35 23.7	143.06	0.63	.0072054	4.2	17 31 19.63
29	180	97 33 14.2	32 37.1	143.06	0.55	.0072143	3.2	17 27 23.72
30	181	98 30 27.7	29 50.4	143.06	0.46	.0072206	2.1	17 23 27.81
31	182	99 27 41.1	27 3.6	143.05	+0.34	0.0072242	+ 0.9	17 19 31.90

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.0.

Diff. for 1 hour.
−9s.8296
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 29.4	15 33.8	56 44.3	+1.37	57 0.5	+1.34	0 18.3	2.37	1.4
2	15 38.1	15 42.2	57 16.3	1.29	57 31.4	1.24	1 16.0	2.41	2.4
3	15 46.2	15 49.9	57 45.9	1.17	57 59.6	1.10	2 13.8	2.38	3.4
4	15 53.4	15 56.6	58 12.4	1.03	58 24.2	0.95	3 10.0	2.28	4.4
5	15 59.5	16 2.3	58 35.1	0.87	58 45.1	0.79	4 3.5	2.17	5.4
6	16 4.7	16 6.9	58 54.0	0.70	59 1.9	0.62	4 54.3	2.07	6.4
7	16 8.9	16 10.3	59 8.9	0.53	59 14.7	0.44	5 43.2	2.01	7.4
8	16 11.6	16 12.5	59 19.4	0.34	59 22.8	+0.23	6 31.3	2.01	8.4
9	16 13.1	16 13.3	59 24.8	+0.11	59 25.3	−0.02	7 19.9	2.06	9.4
10	16 13.0	16 12.2	59 24.3	−0.16	59 21.4	0.32	8 10.5	2.17	10.4
11	16 10.9	16 9.1	59 16.7	0.47	59 10.1	0.63	9 3.8	2.30	11.4
12	16 6.6	16 3.9	59 1.5	0.80	58 50.9	0.96	10 0.4	2.43	12.4
13	16 0.5	15 56.5	58 38.4	1.12	58 24.1	1.26	10 59.6	2.50	13.4
14	15 52.3	15 47.5	58 8.2	1.39	57 50.8	1.50	11 59.6	2.48	14.4
15	15 42.5	15 37.2	57 32.3	1.58	57 13.0	1.64	12 58.0	2.37	15.4
16	15 31.8	15 26.4	56 53.1	1.66	56 33.2	1.66	13 53.0	2.20	16.4
17	15 21.0	15 15.8	56 13.4	1.62	55 54.3	1.56	14 43.8	2.01	17.4
18	15 10.8	15 6.2	55 36.1	1.47	55 19.1	1.35	15 30.0	1.85	18.4
19	15 2.0	14 58.3	55 3.7	1.21	54 50.1	1.05	16 13.0	1.73	19.4
20	14 55.1	14 52.6	54 38.5	0.87	54 29.1	0.69	16 53.6	1.66	20.4
21	14 50.7	14 49.4	54 22.1	0.48	54 17.5	−0.27	17 33.1	1.63	21.4
22	14 48.9	14 49.0	54 15.5	−0.06	54 16.1	+0.16	18 12.5	1.66	22.4
23	14 49.9	14 51.5	54 19.3	+0.37	54 25.0	0.58	18 53.1	1.73	23.4
24	14 53.7	14 56.6	54 33.2	0.78	54 43.8	0.98	19 35.9	1.85	24.4
25	15 0.1	15 4.1	54 56.6	1.15	55 11.4	1.31	20 22.1	2.01	25.4
26	15 8.6	15 13.5	55 27.9	1.44	55 46.0	1.56	21 12.3	2.18	26.4
27	15 18.8	15 24.2	56 5.2	1.65	56 25.4	1.70	22 6.7	2.34	27.4
28	15 29.9	15 35.5	56 46.0	1.73	57 6.7	1.72	23 4.2	2.44	28.4
29	15 41.0	15 46.5	57 27.1	1.68	57 46.9	1.61	δ		29.4
30	15 51.5	15 56.3	58 5.6	1.51	58 23.0	1.38	0 3.1	2.45	30.4
31	16 0.5	16 4.3	58 38.7	1.24	58 52.6	1.07	1 1.3	2.38	1.0
32	16 7.5	16 10.2	59 4.4	+0.89	59 14.0	+0.71	1 57.2	2.26	2.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 1.					**MONDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 56 56.55	2.4432	N.27 2 20.9	2.086	0	6 55 53.11	2.4643	N.25 34 35.0	5.757
1	4 59 23.24	2.4465	27 4 21.4	1.929	1	6 58 20.89	2.4618	25 28 44.8	5.915
2	5 1 50.13	2.4498	27 6 12.4	1.771	2	7 0 48.52	2.4592	25 22 45.2	6.072
3	5 4 17.22	2.4531	27 7 53.9	1.612	3	7 3 15.99	2.4564	25 16 36.1	6.230
4	5 6 44.50	2.4562	27 9 25.8	1.453	4	7 5 43.29	2.4537	25 10 17.6	6.387
5	5 9 11.96	2.4591	27 10 48.2	1.293	5	7 8 10.43	2.4508	25 3 49.7	6.542
6	5 11 39.59	2.4618	27 12 1.0	1.132	6	7 10 37.39	2.4478	24 57 12.6	6.696
7	5 14 7.38	2.4645	27 13 4.1	0.971	7	7 13 4.17	2.4448	24 50 26.2	6.850
8	5 16 35.33	2.4670	27 13 57.5	0.810	8	7 15 30.76	2.4417	24 43 30.6	7.003
9	5 19 3.42	2.4694	27 14 41.3	0.649	9	7 17 57.17	2.4385	24 36 25.8	7.156
10	5 21 31.66	2.4717	27 15 15.4	0.486	10	7 20 23.38	2.4352	24 29 11.9	7.307
11	5 24 0.03	2.4738	27 15 39.6	0.322	11	7 22 49.39	2.4318	24 21 49.0	7.457
12	5 26 28.52	2.4758	27 15 54.0	+0.158	12	7 25 15.19	2.4283	24 14 17.1	7.607
13	5 28 57.13	2.4778	27 15 58.6	−0.005	13	7 27 40.78	2.4248	24 6 36.2	7.756
14	5 31 25.86	2.4797	27 15 53.4	0.169	14	7 30 6.16	2.4213	23 58 46.4	7.903
15	5 33 54.69	2.4813	27 15 38.3	0.334	15	7 32 31.33	2.4177	23 50 47.9	8.049
16	5 36 23.62	2.4828	27 15 13.3	0.499	16	7 34 56.28	2.4139	23 42 40.6	8.195
17	5 38 52.63	2.4842	27 14 38.4	0.663	17	7 37 21.00	2.4101	23 34 24.5	8.340
18	5 41 21.72	2.4855	27 13 53.7	0.828	18	7 39 45.49	2.4062	23 25 59.8	8.483
19	5 43 50.89	2.4867	27 12 59.0	0.994	19	7 42 9.75	2.4023	23 17 26.5	8.626
20	5 46 20.12	2.4876	27 11 54.4	1.160	20	7 44 33.77	2.3984	23 8 44.7	8.767
21	5 48 49.40	2.4884	27 10 39.8	1.327	21	7 46 57.56	2.3945	22 59 54.4	8.908
22	5 51 18.73	2.4892	27 9 15.2	1.492	22	7 49 21.11	2.3904	22 50 55.7	9.047
23	5 53 48.10	2.4898	N.27 7 40.7	1.658	23	7 51 44.41	2.3863	N.22 41 48.7	9.185
	SUNDAY 2.					**TUESDAY 4.**			
0	5 56 17.51	2.4903	N.27 5 56.2	1.825	0	7 54 7.47	2.3822	N.22 32 33.5	9.322
1	5 58 46.94	2.4907	27 4 1.7	1.992	1	7 56 30.28	2.3781	22 23 10.1	9.458
2	6 1 16.39	2.4908	27 1 57.2	2.157	2	7 58 52.84	2.3738	22 13 38.5	9.594
3	6 3 45.84	2.4909	26 59 42.8	2.323	3	8 1 15.14	2.3695	22 3 58.8	9.727
4	6 6 15.30	2.4909	26 57 18.4	2.490	4	8 3 37.18	2.3653	21 54 11.2	9.859
5	6 8 44.75	2.4907	26 54 44.0	2.656	5	8 5 58.97	2.3611	21 44 15.7	9.991
6	6 11 14.19	2.4904	26 51 59.7	2.822	6	8 8 20.51	2.3568	21 34 12.3	10.122
7	6 13 43.60	2.4899	26 49 5.4	2.987	7	8 10 41.79	2.3524	21 24 1.1	10.250
8	6 16 12.98	2.4894	26 46 1.2	3.153	8	8 13 2.80	2.3480	21 13 42.3	10.378
9	6 18 42.33	2.4887	26 42 47.0	3.319	9	8 15 23.55	2.3436	21 3 15.8	10.505
10	6 21 11.63	2.4879	26 39 22.9	3.484	10	8 17 44.03	2.3392	20 52 41.7	10.630
11	6 23 40.88	2.4870	26 35 48.9	3.649	11	8 20 4.25	2.3348	20 42 0.2	10.753
12	6 26 10.07	2.4859	26 32 5.0	3.814	12	8 22 24.21	2.3304	20 31 11.3	10.876
13	6 28 39.19	2.4847	26 28 11.2	3.978	13	8 24 43.90	2.3259	20 20 15.1	10.997
14	6 31 8.23	2.4834	26 24 7.6	4.143	14	8 27 3.32	2.3215	20 9 11.6	11.117
15	6 33 37.20	2.4821	26 19 54.1	4.307	15	8 29 22.48	2.3171	19 58 1.0	11.236
16	6 36 6.08	2.4805	26 15 30.8	4.469	16	8 31 41.37	2.3126	19 46 43.3	11.354
17	6 38 34.86	2.4788	26 10 57.8	4.632	17	8 33 59.99	2.3081	19 35 18.5	11.471
18	6 41 3.54	2.4771	26 6 15.0	4.795	18	8 36 18.34	2.3037	19 23 46.8	11.586
19	6 43 32.11	2.4752	26 1 22.4	4.957	19	8 38 36.43	2.2992	19 12 8.2	11.699
20	6 46 0.56	2.4732	25 56 20.2	5.118	20	8 40 54.25	2.2947	19 0 22.9	11.811
21	6 48 28.90	2.4712	25 51 8.3	5.278	21	8 43 11.80	2.2903	18 48 30.9	11.922
22	6 50 57.11	2.4690	25 45 46.8	5.438	22	8 45 29.09	2.2860	18 36 32.3	12.032
23	6 53 25.18	2.4667	25 40 15.7	5.598	23	8 47 46.12	2.2817	18 24 27.1	12.140
24	6 55 53.11	2.4643	N.25 34 35.0	5.757	24	8 50 2.89	2.2773	N.18 12 15.5	12.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 5.					FRIDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 50 2.89	2.2773	N.18 12 15.5	12.247	0	10 35 2.84	2.1194	N. 6 47 43.7	15.737
1	8 52 19.40	2.2729	17 59 57.5	12.352	1	10 37 9.95	2.1178	6 31 58.3	15.775
2	8 54 35.64	2.2685	17 47 33.2	12.457	2	10 39 16.97	2.1162	6 16 10.7	15.811
3	8 56 51.62	2.2642	17 35 2.7	12.559	3	10 41 23.89	2.1146	6 0 21.0	15.846
4	8 59 7.34	2.2599	17 22 26.1	12.660	4	10 43 30.72	2.1132	5 44 29.2	15.881
5	9 1 22.81	2.2557	17 9 43.5	12.760	5	10 45 37.47	2.1118	5 28 35.3	15.914
6	9 3 38.02	2.2514	16 56 54.9	12.859	6	10 47 44.14	2.1105	5 12 39.5	15.945
7	9 5 52.98	2.2472	16 44 0.4	12.957	7	10 49 50.73	2.1093	4 56 41.9	15.974
8	9 8 7.69	2.2430	16 31 0.1	13.052	8	10 51 57.26	2.1082	4 40 42.6	16.002
9	9 10 22.14	2.2388	16 17 54.2	13.146	9	10 54 3.72	2.1072	4 24 41.6	16.030
10	9 12 36.35	2.2347	16 4 42.6	13.240	10	10 56 10.12	2.1062	4 8 39.0	16.056
11	9 14 50.31	2.2307	15 51 25.4	13.332	11	10 58 16.47	2.1054	3 52 34.9	16.080
12	9 17 4.03	2.2267	15 38 2.8	13.421	12	11 0 22.77	2.1046	3 36 29.4	16.102
13	9 19 17.51	2.2227	15 24 34.9	13.510	13	11 2 29.02	2.1039	3 20 22.6	16.124
14	9 21 30.75	2.2187	15 11 1.6	13.598	14	11 4 35.24	2.1033	3 4 14.5	16.144
15	9 23 43.76	2.2148	14 57 23.1	13 684	15	11 6 41.42	2.1027	2 48 5.3	16.162
16	9 25 56.53	2.2110	14 43 39.5	13.769	16	11 8 47.57	2.1023	2 31 55.1	16.179
17	9 28 9.08	2.2072	14 29 50.8	13.852	17	11 10 53.70	2.1020	2 15 43.8	16.196
18	9 30 21.40	2.2035	14 15 57.2	13.934	18	11 12 59.81	2.1018	1 59 31.6	16.210
19	9 32 33.50	2.1998	14 1 58.7	14.015	19	11 15 5.91	2.1016	1 43 18.6	16.222
20	9 34 45.38	2.1961	13 47 55.4	14.093	20	11 17 12.00	2.1014	1 27 4.9	16.234
21	9 36 57.03	2.1924	13 33 47.5	14.170	21	11 19 18.08	2.1014	1 10 50.5	16.245
22	9 39 8.47	2.1889	13 19 35.0	14.247	22	11 21 24.17	2.1015	0 54 35.5	16.253
23	9 41 19.70	2.1854	N.13 5 17.9	14.322	23	11 23 30.26	2.1017	N. 0 38 20.1	16.260
	THURSDAY 6.					SATURDAY 8.			
0	9 43 30.72	2.1819	N.12 50 56.3	14.396	0	11 25 36.37	2.1019	N. 0 22 4.3	16.266
1	9 45 41.53	2.1786	12 36 30.4	14.467	1	11 27 42.49	2.1022	N. 0 5 48.2	16.270
2	9 47 52.15	2.1753	12 22 0.2	14.538	2	11 29 48.63	2.1027	S. 0 10 28.1	16.273
3	9 50 2.57	2.1720	12 7 25.8	14 607	3	11 31 54.81	2.1032	0 26 44.6	16.275
4	9 52 12.79	2.1688	11 52 47.3	14.675	4	11 34 1.02	2.1038	0 43 1.1	16.275
5	9 54 22.83	2.1657	11 38 4.8	14.742	5	11 36 7.27	2.1045	0 59 17.6	16.274
6	9 56 32.68	2.1627	11 23 18.3	14.807	6	11 38 13.56	2.1052	1 15 34.0	16.271
7	9 58 42.35	2.1597	11 8 28.0	14.870	7	11 40 19.90	2.1061	1 31 50.1	16.266
8	10 0 51.84	2.1567	10 53 33.9	14.932	8	11 42 26.29	2.1071	1 48 5.9	16.261
9	10 3 1.15	2.1538	10 38 36.1	14.993	9	11 44 32.75	2 1082	2 4 21.4	16.254
10	10 5 10.29	2.1510	10 23 34.7	15.052	10	11 46 39.27	2.1093	2 20 36.4	16.245
11	10 7 19.27	2.1483	10 8 29.8	15.111	11	11 48 45.86	2.1104	2 36 50.8	16.234
12	10 9 28.09	2.1457	9 53 21.4	15.168	12	11 50 52.52	2.1117	2 53 4.5	16.222
13	10 11 36.75	2.1430	9 38 9.6	15.223	13	11 52 59.26	2.1131	3 9 17.5	16.210
14	10 13 45.26	2.1405	9 22 54.6	15.276	14	11 55 6.09	2.1146	3 25 29.7	16.196
15	10 15 53.61	2.1380	9 7 36.5	15.328	15	11 57 13.01	2.1161	3 41 41.0	16.180
16	10 18 1.82	2.1357	8 52 15.3	15.379	16	11 59 20.02	2.1177	3 57 51.3	16.162
17	10 20 9.89	2.1334	8 36 51.0	15.429	17	12 1 27.13	2.1194	4 14 0.5	16.143
18	10 22 17.83	2.1312	8 21 23.8	15.477	18	12 3 34.35	2.1213	4 30 8.5	16.123
19	10 24 25.64	2.1290	8 5 53.7	15.524	19	12 5 41.68	2.1232	4 46 15.3	16.102
20	10 26 33.31	2.1268	7 50 20.9	15.569	20	12 7 49.13	2.1251	5 2 20.7	16.078
21	10 28 40.86	2.1249	7 34 45.4	15.613	21	12 9 56.69	2.1271	5 18 24.7	16.054
22	10 30 48.30	2.1231	7 19 7.3	15.656	22	12 12 4.38	2.1293	5 34 27.2	16.027
23	10 32 55.63	2.1212	7 3 26.7	15.697	23	12 14 12.21	2.1316	5 50 28.0	15.999
24	10 35 2.84	2.1194	N. 6 47 43.7	15.737	24	12 16 20.17	2.1338	S. 6 6 27.1	15.970

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 16 20.17	2.1338	S. 6 6 27.1	15.970
1	12 18 28.27	2.1362	6 22 24.4	15.939
2	12 20 36.52	2.1387	6 38 19.8	15.907
3	12 22 44.91	2.1412	6 54 13.3	15.874
4	12 24 53.46	2.1438	7 10 4.7	15.838
5	12 27 2.17	2.1466	7 25 53.9	15.802
6	12 29 11.05	2.1494	7 41 40.9	15.763
7	12 31 20.09	2.1522	7 57 25.5	15.723
8	12 33 29.31	2.1552	8 13 7.7	15.682
9	12 35 38.71	2.1582	8 28 47.4	15.639
10	12 37 48.29	2.1613	8 44 24.4	15.594
11	12 39 58.06	2.1644	8 59 58.7	15.548
12	12 42 8.02	2.1677	9 15 30 2	15.501
13	12 44 18.18	2.1710	9 30 58.8	15.452
14	12 46 28.54	2.1743	9 46 24.4	15.401
15	12 48 39.10	2.1777	10 1 46.9	15.349
16	12 50 49.87	2.1813	10 17 6.3	15.296
17	12 53 0.86	2.1850	10 32 22.4	15.240
18	12 55 12.07	2.1887	10 47 35.1	15.183
19	12 57 23.50	2.1924	11 2 44.4	15.125
20	12 59 35.16	2.1962	11 17 50.1	15.064
21	13 1 47.04	2.2000	11 32 52.1	15.002
22	13 3 59.16	2.2040	11 47 50.4	14.939
23	13 6 11.52	2.2081	S. 12 2 44.8	14.874

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 8 24.13	2.2122	S. 12 17 35.3	14.808
1	13 10 36.98	2.2163	12 32 21.8	14.740
2	13 12 50.08	2.2204	12 47 4.1	14.670
3	13 15 3.43	2.2246	13 1 42.2	14.599
4	13 17 17.03	2.2289	13 16 16.0	14.527
5	13 19 30.90	2.2333	13 30 45.4	14.452
6	13 21 45.03	2.2377	13 45 10.2	14.375
7	13 23 59.42	2.2422	13 59 30.4	14.298
8	13 26 14.09	2.2467	14 13 46.0	14.219
9	13 28 29.03	2.2513	14 27 56.7	14.138
10	13 30 44.25	2.2559	14 42 2.5	14.056
11	13 32 59.74	2.2605	14 56 3.4	13.972
12	13 35 15.51	2.2652	15 9 59.2	13.887
13	13 37 31.57	2.2700	15 23 49.8	13.799
14	13 39 47.91	2.2748	15 37 35.1	13.710
15	13 42 4.54	2.2796	15 51 15.0	13.619
16	13 44 21.46	2.2845	16 4 49.4	13.527
17	13 46 38.68	2.2894	16 18 18.3	13.434
18	13 48 56.19	2.2943	16 31 41.5	13.338
19	13 51 14.00	2.2993	16 44 58.9	13.242
20	13 53 32.11	2.3042	16 58 10.5	13.143
21	13 55 50.51	2.3092	17 11 16.1	13.043
22	13 58 9.22	2.3143	17 24 15.6	12.941
23	14 0 28.23	2.3194	17 37 9.0	12.837
24	14 2 47.55	2.3245	S. 17 49 56.1	12.732

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 2 47.55	2.3245	S. 17 49 56.1	12.732
1	14 5 7.17	2.3296	18 2 36.9	12.626
2	14 7 27.10	2.3347	18 15 11.2	12.518
3	14 9 47.34	2.3399	18 27 39.0	12.408
4	14 12 7.89	2.3450	18 40 0.2	12.297
5	14 14 28.74	2.3501	18 52 14.7	12.184
6	14 16 49.90	2.3553	19 4 22.3	12.069
7	14 19 11.38	2.3605	19 16 23.0	11.953
8	14 21 33.16	2.3656	19 28 16.7	11.836
9	14 23 55.25	2.3707	19 40 3.3	11.717
10	14 26 17.65	2.3759	19 51 42.7	11.596
11	14 28 40.36	2.3811	20 3 14.8	11.474
12	14 31 3.38	2.3862	20 14 39.6	11.351
13	14 33 26.71	2 3914	20 25 56.9	11.225
14	14 35 50.35	2.3965	20 37 6.6	11.097
15	14 38 14.29	2.4016	20 48 8.6	10.969
16	14 40 38.54	2.4067	20 59 2.9	10.840
17	14 43 3.09	2.4117	21 9 49.4	10.708
18	14 45 27.95	2.4168	21 20 27.9	10.575
19	14 47 53.11	2.4218	21 30 58.4	10.442
20	14 50 18.56	2.4267	21 41 20.9	10.307
21	14 52 44.31	2.4317	21 51 35.2	10.169
22	14 55 10.36	2.4365	22 1 41.2	10.031
23	14 57 36.69	2.4413	S. 22 11 38.9	9.891

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 0 3.31	2.4461	S. 22 21 28.1	9.749
1	15 2 30.22	2.4508	22 31 8.8	9.607
2	15 4 57.41	2.4556	22 40 41.0	9.464
3	15 7 24.89	2.4603	22 50 4.5	9.318
4	15 9 52.64	2.4648	22 59 19.2	9.172
5	15 12 20.66	2.4693	23 8 25.1	9.024
6	15 14 48.95	2.4738	23 17 22.1	8.675
7	15 17 17.51	2.4782	23 26 10.1	8.725
8	15 19 46.33	2.4824	23 34 49.1	8.574
9	15 22 15.40	2.4867	23 43 19.0	8.422
10	15 24 44.73	2.4909	23 51 39.7	8.268
11	15 27 14.31	2.4949	23 59 51.1	8.112
12	15 29 44.12	2.4968	24 7 53.1	7.955
13	15 32 14.17	2.5028	24 15 45.7	7.798
14	15 34 44.46	2.5067	24 23 28.9	7.641
15	15 37 14.98	2.5105	24 31 2.6	7.482
16	15 39 45.72	2.5141	24 38 26.7	7.321
17	15 42 16.67	2.5177	24 45 41.1	7.160
18	15 44 47.84	2.5211	24 52 45.9	6.998
19	15 47 19.21	2.5244	24 59 40.9	6.834
20	15 49 50.77	2.5277	25 6 26.0	6.670
21	15 52 22.53	2.5308	25 13 1.3	6.505
22	15 54 54.47	2.5338	25 19 26.6	6.339
23	15 57 26.59	2.5368	25 25 41.9	6.172
24	15 59 58.89	2.5397	S. 25 31 47.2	6.004

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 59 58.89	2.5397	S. 25 31 47.2	6.004
1	16 2 31.35	2.5423	25 37 42.4	5.836
2	16 5 3.96	2.5448	25 43 27.5	5.667
3	16 7 36.73	2.5473	25 49 2.4	5.497
4	16 10 9.64	2.5496	25 54 27.1	5.326
5	16 12 42.68	2.5517	25 59 41.5	5.155
6	16 15 15.85	2.5538	26 4 45.7	4.983
7	16 17 49.14	2.5558	26 9 39.5	4.811
8	16 20 22.54	2.5576	26 14 23.0	4.638
9	16 22 56.05	2.5593	26 18 56.1	4.465
10	16 25 29.65	2.5608	26 23 18.8	4.291
11	16 28 3.34	2.5621	26 27 31.0	4.117
12	16 30 37.10	2.5633	26 31 32.8	3.942
13	16 33 10.93	2.5644	26 35 24.1	3.767
14	16 35 44.83	2.5654	26 39 4.9	3.592
15	16 38 18.78	2.5662	26 42 35.1	3.416
16	16 40 52.77	2.5668	26 45 54.8	3.240
17	16 43 26.80	2.5674	26 49 3.9	3.063
18	16 46 0.86	2.5678	26 52 2.4	2.887
19	16 48 34.94	2.5680	26 54 50.3	2.710
20	16 51 9.02	2.5680	26 57 27.6	2.534
21	16 53 43.10	2.5679	26 59 54.4	2.358
22	16 56 17.17	2.5677	27 2 10.6	2.181
23	16 58 51.22	2.5673	S. 27 4 16.1	2.003

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 1 25.25	2.5668	S. 27 6 11.0	1.827
1	17 3 59.24	2.5661	27 7 55.3	1.650
2	17 6 33.18	2.5652	27 9 29.0	1.474
3	17 9 7.07	2.5643	27 10 52.2	1.298
4	17 11 40.90	2.5632	27 12 4.8	1.122
5	17 14 14.65	2.5618	27 13 6.8	0.946
6	17 16 48.32	2.5604	27 13 58.3	0.770
7	17 19 21.90	2.5588	27 14 39.2	0.594
8	17 21 55.38	2.5570	27 15 9.6	0.420
9	17 24 28.74	2.5550	27 15 29.6	0.246
10	17 27 1.98	2.5530	27 15 39.1	−0.071
11	17 29 35.10	2.5509	27 15 38.1	+0.103
12	17 32 8.09	2.5486	27 15 26.7	0.277
13	17 34 40.93	2.5461	27 15 4.9	0.449
14	17 37 13.62	2.5434	27 14 32.8	0.622
15	17 39 46.14	2.5406	27 13 50.3	0 794
16	17 42 18.49	2.5377	27 12 57.5	0.965
17	17 44 50.66	2.5347	27 11 54.5	1.135
18	17 47 22.65	2.5315	27 10 41.3	1.305
19	17 49 54.44	2.5282	27 9 17.9	1.474
20	17 52 26.03	2.5247	27 7 44.4	1.643
21	17 54 57.40	2.5210	27 6 0.7	1.812
22	17 57 28.55	2.5172	27 4 7.0	1.978
23	17 59 59.47	2.5134	27 2 3.3	2.144
24	18 2 30.16	2.5094	S. 26 59 49.7	2.309

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 2 30.16	2.5094	S. 26 59 49.7	2.309
1	18 5 0.60	2.5053	26 57 26.2	2.473
2	18 7 30.79	2.5011	26 54 52.9	2.637
3	18 10 0.73	2.4967	26 52 9.7	2.801
4	18 12 30.40	2.4922	26 49 16.8	2.962
5	18 14 59.79	2.4876	26 46 14.3	3.122
6	18 17 28.91	2.4829	26 43 2.1	3.282
7	18 19 57.74	2.4781	26 39 40.4	3.441
8	18 22 26.28	2.4731	26 36 9.2	3.598
9	18 24 54.51	2.4680	26 32 28.6	3.755
10	18 27 22.44	2.4629	26 28 38.6	3.911
11	18 29 50.06	2.4577	26 24 39.3	4.065
12	18 32 17.36	2.4523	26 20 30.8	4.218
13	18 34 44.34	2.4468	26 16 13.2	4.370
14	18 37 10.98	2.4413	26 11 46.4	4.522
15	18 39 37.29	2.4357	26 7 10.6	4.672
16	18 42 3.26	2.4299	26 2 25.8	4.820
17	18 44 28.88	2.4241	25 57 32.2	4.967
18	18 46 54.16	2.4183	25 52 29.8	5.113
19	18 49 19.08	2.4123	25 47 18.7	5.258
20	18 51 43.64	2.4062	25 41 58.9	5.402
21	18 54 7.83	2.4001	25 36 30.5	5.544
22	18 56 31.65	2.3939	25 30 53.6	5.685
23	18 58 55.10	2.3877	S. 25 25 8.3	5.824

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 1 18.17	2.3813	S. 25 19 14.7	5.962
1	19 3 40.86	2.3750	25 13 12.9	6.099
2	19 6 3.17	2.3686	25 7 2.8	6.236
3	19 8 25.09	2.3621	25 0 44.5	6.371
4	19 10 46.62	2.3555	24 54 18.2	6.503
5	19 13 7.75	2.3489	24 47 44.1	6.633
6	19 15 28.49	2.3423	24 41 2.2	6.763
7	19 17 48.83	2.3356	24 34 12.5	6.893
8	19 20 8.76	2.3288	24 27 15.0	7.022
9	19 22 28.29	2.3221	24 20 9.9	7.148
10	19 24 47.41	2.3153	24 12 57.3	7.273
11	19 27 6.13	2.3086	24 5 37.2	7.396
12	19 29 24.44	2.3017	23 58 9.8	7.518
13	19 31 42.33	2.2948	23 50 35.1	7.638
14	19 33 59.81	2.2879	23 42 53.2	7.757
15	19 36 16.88	2.2810	23 35 4.2	7.875
16	19 38 33.53	2.2740	23 27 8.2	7.991
17	19 40 49.76	2.2670	23 19 5.3	8.106
18	19 43 5.57	2.2600	23 10 55.5	8.220
19	19 45 20.96	2.2530	23 2 38.9	8.332
20	19 47 35.93	2.2461	22 54 15.7	8.442
21	19 49 50.40	2.2392	22 45 45.9	8.551
22	19 52 4.63	2.2322	22 37 9.6	8.659
23	19 54 18.35	2.2252	22 28 26.8	8.766
24	19 56 31.65	2.2182	S. 22 19 37.7	8.871

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 56 31.65	2.2182	S. 22 19 37.7	8.871
1	19 58 44.53	2.2112	22 10 42.3	8.974
2	20 0 56.99	2.2042	22 1 40.8	9.076
3	20 3 9.03	2.1972	21 52 33.2	9.177
4	20 5 20.65	2.1902	21 43 19.6	9.277
5	20 7 31.85	2.1832	21 34 0.0	9.375
6	20 9 42.64	2.1763	21 24 34.6	9.472
7	20 11 53.01	2.1694	21 15 3.4	9.567
8	20 14 2.97	2.1625	21 5 26.6	9.660
9	20 16 12.51	2.1556	20 55 44.2	9.752
10	20 18 21.64	2.1487	20 45 56.3	9.844
11	20 20 30.36	2.1419	20 36 2.9	9.934
12	20 22 38.67	2.1351	20 26 4.2	10.022
13	20 24 46.57	2.1283	20 16 0.2	10.110
14	20 26 54.07	2.1216	20 5 51.0	10.195
15	20 29 1.16	2.1148	19 55 36.8	10.278
16	20 31 7.85	2.1082	19 45 17.6	10.362
17	20 33 14.14	2.1016	19 34 53.4	10.445
18	20 35 20.04	2.0950	19 24 24.2	10.526
19	20 37 25.54	2.0884	19 13 50.3	10.604
20	20 39 30.65	2.0818	19 3 11.7	10.682
21	20 41 35.36	2.0753	18 52 28.4	10.760
22	20 43 39.69	2.0689	18 41 40.5	10.836
23	20 45 43.63	2.0625	S. 18 30 48.1	10.909

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 47 47.19	2.0562	S. 18 19 51.4	10.982
1	20 49 50.37	2.0499	18 8 50.3	11.054
2	20 51 53.17	2.0436	17 57 44.9	11.124
3	20 53 55.60	2.0373	17 46 35.4	11.193
4	20 55 57.65	2.0312	17 35 21.8	11.261
5	20 57 59.34	2.0251	17 24 4.1	11.328
6	21 0 0.66	2.0190	17 12 42.4	11.394
7	21 2 1.62	2.0130	17 1 16.8	11.458
8	21 4 2.22	2.0071	16 49 47.4	11.521
9	21 6 2.47	2.0012	16 38 14.3	11.583
10	21 8 2.37	1.9954	16 26 37.4	11.645
11	21 10 1.92	1.9896	16 14 56.9	11.704
12	21 12 1.12	1.9838	16 3 12.9	11.763
13	21 13 59.98	1.9782	15 51 25.4	11.821
14	21 15 58.50	1.9726	15 39 34.4	11.877
15	21 17 56.69	1.9671	15 27 40.1	11.932
16	21 19 54.55	1.9616	15 15 42.5	11.987
17	21 21 52.08	1.9562	15 3 41.7	12.040
18	21 23 49.29	1.9508	14 51 37.7	12.092
19	21 25 46.18	1.9456	14 39 30.6	12.143
20	21 27 42.76	1.9404	14 27 20.5	12.193
21	21 29 39.02	1.9352	14 15 7.4	12.242
22	21 31 34.98	1.9301	14 2 51.4	12.290
23	21 33 30.63	1.9250	13 50 32.6	12.337
24	21 35 25.98	1.9200	S. 13 38 11.0	12.383

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 35 25.98	1.9200	S. 13 38 11.0	12.383
1	21 37 21.03	1.9152	13 25 46.7	12.428
2	21 39 15.80	1.9104	13 13 19.7	12.472
3	21 41 10.28	1.9057	13 0 50.1	12.514
4	21 43 4.48	1.9010	12 48 18.0	12.557
5	21 44 58.40	1.8963	12 35 43.3	12.598
6	21 46 52.04	1.8917	12 23 6.2	12.638
7	21 48 45.41	1.8873	12 10 26.7	12.677
8	21 50 38.52	1.8830	11 57 44.9	12.715
9	21 52 31.37	1.8787	11 45 0.9	12.752
10	21 54 23.96	1.8744	11 32 14.7	12.788
11	21 56 16.30	1.8702	11 19 26.3	12.824
12	21 58 8.38	1.8660	11 6 35.8	12.858
13	22 0 0.22	1.8620	10 53 43.3	12.892
14	22 1 51.82	1.8581	10 40 48.8	12.925
15	22 3 43.19	1.8542	10 27 52.3	12.957
16	22 5 34.33	1.8504	10 14 53.9	12.988
17	22 7 25.24	1.8466	10 1 53.7	13.018
18	22 9 15.92	1.8429	9 48 51.7	13.047
19	22 11 6.39	1.8393	9 35 48.0	13.076
20	22 12 56.64	1.8357	9 22 42.6	13.103
21	22 14 46.68	1.8323	9 9 35.6	13.130
22	22 16 36.52	1.8290	8 56 27.0	13.157
23	22 18 26.16	1.8257	S. 8 43 16.8	13.182

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 20 15.60	1.8224	S. 8 30 5.2	13.205
1	22 22 4.85	1.8193	8 16 52.2	13.229
2	22 23 53.92	1.8162	8 3 37.7	13.252
3	22 25 42.80	1.8132	7 50 21.9	13.274
4	22 27 31.51	1.8103	7 37 4.8	13.296
5	22 29 20.04	1.8074	7 23 46.4	13.317
6	22 31 8.40	1.8047	7 10 26.8	13.336
7	22 32 56.60	1.8020	6 57 6.1	13.354
8	22 34 44.64	1.7993	6 43 44.3	13.373
9	22 36 32.52	1.7967	6 30 21.3	13.392
10	22 38 20.25	1.7943	6 16 57.3	13.408
11	22 40 7.84	1.7920	6 3 32.4	13.423
12	22 41 55.29	1.7897	5 50 6.5	13.439
13	22 43 42.60	1.7874	5 36 39.7	13.453
14	22 45 29.77	1.7852	5 23 12.1	13.467
15	22 47 16.82	1.7832	5 9 43.7	13.480
16	22 49 3.75	1.7812	4 56 14.5	13.492
17	22 50 50.56	1.7792	4 42 44.6	13.505
18	22 52 37.25	1.7773	4 29 13.9	13.517
19	22 54 23.83	1.7755	4 15 42.6	13.526
20	22 56 10.31	1.7738	4 2 10.8	13.535
21	22 57 56.69	1.7722	3 48 38.4	13.544
22	22 59 42.97	1.7707	3 35 5.5	13.553
23	23 1 29.17	1.7692	3 21 32.1	13.561
24	23 3 15.28	1.7678	S. 3 7 58.2	13.568

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 21.					SUNDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 3 15.28	1.7678	S. 3 7 58.2	13.568	0	0 27 56.84	1.7903	N. 7 39 4.1	13.146
1	23 5 1.31	1.7665	2 54 23.9	13.574	1	0 29 44.33	1.7927	7 52 12.1	13.121
2	23 6 47.26	1.7652	2 40 49.3	13.579	2	0 31 31.96	1.7951	8 5 18.6	13.096
3	23 8 33.13	1.7640	2 27 14.4	13.584	3	0 33 19.74	1.7976	8 18 23.6	13.070
4	23 10 18.94	1.7630	2 13 39.2	13.588	4	0 35 7.67	1.8001	8 31 27.0	13.043
5	23 12 4.69	1.7619	2 0 3.8	13.592	5	0 36 55.75	1.8027	8 44 28.7	13.015
6	23 13 50.37	1.7609	1 46 28.1	13.596	6	0 38 43.99	1.8053	8 57 28.8	12.987
7	23 15 36.00	1.7601	1 32 52.3	13.598	7	0 40 32.39	1.8082	9 10 27.2	12.958
8	23 17 21.58	1.7593	1 19 16.4	13.600	8	0 42 20.97	1.8111	9 23 23.8	12.928
9	23 19 7.12	1.7587	1 5 40.3	13.602	9	0 44 9.72	1.8140	9 36 18.5	12.897
10	23 20 52.62	1.7580	0 52 4.2	13.602	10	0 45 58.65	1.8170	9 49 11.4	12.866
11	23 22 38.08	1.7573	0 38 28.1	13.601	11	0 47 47.76	1.8200	10 2 2.4	12.833
12	23 24 23.50	1.7568	0 24 52.1	13.600	12	0 49 37.05	1.8231	10 14 51.4	12.800
13	23 26 8.90	1.7565	S. 0 11 16.1	13.599	13	0 51 26.53	1.8263	10 27 38.4	12.767
14	23 27 54.28	1.7562	N. 0 2 19.8	13.597	14	0 53 16.21	1.8297	10 40 23.4	12.733
15	23 29 39.65	1.7560	0 15 55.5	13.593	15	0 55 6.09	1.8330	10 53 6.4	12.699
16	23 31 25.00	1.7558	0 29 31.0	13.590	16	0 56 56.17	1.8364	11 5 47.3	12.663
17	23 33 10.34	1.7557	0 43 6.3	13.587	17	0 58 46.46	1.8399	11 18 26.0	12.626
18	23 34 55.68	1.7557	0 56 41.4	13.582	18	1 0 36.96	1.8434	11 31 2.4	12.588
19	23 36 41.02	1.7557	1 10 16.1	13.576	19	1 2 27.67	1.8471	11 43 36.6	12.551
20	23 38 26.36	1.7558	1 23 50.5	13.571	20	1 4 18.61	1.8508	11 56 8.5	12.512
21	23 40 11.72	1.7561	1 37 24.6	13.566	21	1 6 9.77	1.8546	12 8 38.0	12.472
22	23 41 57.10	1.7564	1 50 58.3	13.558	22	1 8 1.16	1.8585	12 21 5.1	12.431
23	23 43 42.49	1.7567	N. 2 4 31.5	13.549	23	1 9 52.79	1.8624	N.12 33 29.7	12.389
	SATURDAY 22.					MONDAY 24.			
0	23 45 27.90	1.7571	N. 2 18 4.2	13.541	0	1 11 44.65	1.8663	N.12 45 51.8	12.347
1	23 47 13.34	1.7577	2 31 36.4	13.532	1	1 13 36.75	1.8704	12 58 11.3	12.304
2	23 48 58.82	1.7582	2 45 8.0	13.522	2	1 15 29.10	1.8746	13 10 28.3	12.261
3	23 50 44.33	1.7588	2 58 39.1	13.512	3	1 17 21.70	1.8788	13 22 42.6	12.216
4	23 52 29.88	1.7596	3 12 9.5	13.501	4	1 19 14.55	1.8830	13 34 54.2	12.170
5	23 54 15.48	1.7605	3 25 39.2	13.489	5	1 21 7.66	1.8874	13 47 3.0	12.123
6	23 56 1.14	1.7614	3 39 8.2	13.477	6	1 23 1.04	1.8918	13 59 9.0	12.076
7	23 57 46.85	1.7623	3 52 36.5	13.465	7	1 24 54.68	1.8962	14 11 12.1	12.027
8	23 59 32.62	1.7633	4 6 4.0	13.451	8	1 26 48.59	1.9007	14 23 12.3	11.978
9	0 1 18.45	1.7744	4 19 30.6	13.437	9	1 28 42.77	1.9053	14 35 9.5	11.928
10	0 3 4.35	1.7657	4 32 56.4	13.422	10	1 30 37.23	1.9101	14 47 3.7	11.877
11	0 4 50.33	1.7670	4 46 21.2	13.406	11	1 32 31.98	1.9148	14 58 54.8	11.825
12	0 6 36.39	1.7683	4 59 45.1	13.390	12	1 34 27.01	1.9196	15 10 42.7	11.772
13	0 8 22.53	1.7697	5 13 8.0	13.373	13	1 36 22.33	1.9244	15 22 27.4	11.718
14	0 10 8.75	1.7712	5 26 29.9	13.357	14	1 38 17.94	1.9293	15 34 8.9	11.664
15	0 11 55.07	1.7728	5 39 50.8	13.339	15	1 40 13.85	1.9343	15 45 47.1	11.608
16	0 13 41.49	1.7745	5 53 10.6	13.320	16	1 42 10.06	1.9394	15 57 21.9	11.552
17	0 15 28.01	1.7762	6 6 29.2	13.300	17	1 44 6.58	1.9445	16 8 53.3	11.493
18	0 17 14.63	1.7779	6 19 46.6	13.280	18	1 46 3.40	1.9497	16 20 21.1	11.434
19	0 19 1.36	1.7798	6 33 2.8	13.259	19	1 48 0.54	1.9549	16 31 45.4	11.375
20	0 20 48.21	1.7818	6 46 17.7	13.238	20	1 49 57.99	1.9602	16 43 6.1	11.315
21	0 22 35.18	1.7838	6 59 31.4	13.216	21	1 51 55.76	1.9655	16 54 23.2	11.253
22	0 24 22.27	1.7859	7 12 43.7	13.193	22	1 53 53.85	1.9709	17 5 36.5	11.190
23	0 26 9.49	1.7881	7 25 54.6	13.170	23	1 55 52.27	1.9764	17 16 46.0	11.127
24	0 27 56.84	1.7903	N. 7 39 4.1	13.146	24	1 57 51.02	1.9819	N.17 27 51.7	11.063

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 57 51.02	1.9819	N.17 27 51.7	11.063
1	1 59 50.10	1.9875	17 38 53.5	10.997
2	2 1 49.52	1.9931	17 49 51.3	10.929
3	2 3 49.27	1.9987	18 0 45.0	10.861
4	2 5 49.36	2.0044	18 11 34.6	10.792
5	2 7 49.80	2.0102	18 22 20.0	10.722
6	2 9 50.59	2.0161	18 33 1.3	10.652
7	2 11 51.73	2.0219	18 43 38.3	10.580
8	2 13 53.22	2.0278	18 54 10.9	10.506
9	2 15 55.07	2.0338	19 4 39.0	10.431
10	2 17 57.28	2.0398	19 15 2.6	10.356
11	2 19 59.85	2.0459	19 25 21.7	10.279
12	2 22 2.79	2.0520	19 35 36.1	10.201
13	2 24 6.09	2.0581	19 45 45.8	10.122
14	2 26 9.76	2.0643	19 55 50.8	10.042
15	2 28 13.81	2.0706	20 5 50.9	9.961
16	2 30 18.23	2.0768	20 15 46.1	9.878
17	2 32 23.02	2.0830	20 25 36.3	9.795
18	2 34 28.19	2.0893	20 35 21.5	9.711
19	2 36 33.74	2.0957	20 45 1.6	9.624
20	2 38 39.68	2.1022	20 54 36.4	9.537
21	2 40 46.00	2.1086	21 4 6.0	9.448
22	2 42 52.71	2.1150	21 13 30.2	9.359
23	2 44 59.80	2.1214	N.21 22 49.1	9.269

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 47 7.28	2.1279	N.21 32 2.5	9.177
1	2 49 15.15	2.1345	21 41 10.3	9.083
2	2 51 23.42	2.1411	21 50 12.4	8.988
3	2 53 32.08	2.1476	21 59 8.9	8.893
4	2 55 41.13	2.1542	22 7 59.6	8.796
5	2 57 50.58	2.1607	22 16 44.4	8.697
6	3 0 0.42	2.1673	22 25 23.3	8.598
7	3 2 10.66	2.1740	22 33 56.2	8.497
8	3 4 21.30	2.1806	22 42 23.0	8.395
9	3 6 32.33	2.1872	22 50 43.6	8.291
10	3 8 43.76	2.1938	22 58 57.9	8.187
11	3 10 55.59	2.2004	23 7 6.0	8.082
12	3 13 7.81	2.2070	23 15 7.7	7.974
13	3 15 20.43	2.2137	23 23 2.9	7.866
14	3 17 33.45	2.2204	23 30 51.6	7.756
15	3 19 46.88	2.2271	23 38 33.6	7.644
16	3 22 0.70	2.2336	23 46 8.9	7.532
17	3 24 14.91	2.2402	23 53 37.5	7.420
18	3 26 29.52	2.2468	24 0 59.3	7.305
19	3 28 44.53	2.2534	24 8 14.1	7.188
20	3 30 59.93	2.2599	24 15 21.9	7.071
21	3 33 15.72	2.2665	24 22 22.6	6.952
22	3 35 31.91	2.2731	24 29 16.2	6.832
23	3 37 48.49	2.2795	24 36 2.5	6.711
24	3 40 5.45	2.2859	N.24 42 41.5	6.588

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 40 5.45	2.2859	N.24 42 41.5	6.588
1	3 42 22.80	2.2924	24 49 13.1	6.465
2	3 44 40.54	2.2988	24 55 37.3	6.340
3	3 46 58.66	2.3052	25 1 53.9	6.213
4	3 49 17.16	2.3115	25 8 2.9	6.086
5	3 51 36.04	2.3177	25 14 4.2	5.957
6	3 53 55.29	2.3240	25 19 57.7	5.827
7	3 56 14.92	2.3302	25 25 43.4	5.696
8	3 58 34.91	2.3363	25 31 21.2	5.563
9	4 0 55.27	2.3423	25 36 51.0	5.429
10	4 3 15.99	2.3484	25 42 12.7	5.294
11	4 5 37.08	2.3545	25 47 26.3	5.158
12	4 7 58.53	2.3604	25 52 31.7	5.021
13	4 10 20.33	2.3662	25 57 28.8	4.882
14	4 12 42.47	2.3719	26 2 17.6	4.742
15	4 15 4.96	2.3777	26 6 57.9	4.601
16	4 17 27.79	2.3834	26 11 29.7	4.459
17	4 19 50.96	2.3890	26 15 53.0	4.316
18	4 22 14.47	2.3945	26 20 7.6	4.171
19	4 24 38.30	2.3999	26 24 13.5	4.026
20	4 27 2.45	2.4053	26 28 10.7	3.880
21	4 29 26.93	2.4106	26 31 59.1	3.732
22	4 31 51.72	2.4157	26 35 38.6	3.583
23	4 34 16.81	2.4207	N.26 39 9.1	3.432

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 36 42.20	2.4257	N.26 42 30.5	3.281
1	4 39 7.89	2.4306	26 45 42.8	3.130
2	4 41 33.87	2.4354	26 48 46.1	2.978
3	4 44 0.14	2.4402	26 51 40.2	2.825
4	4 46 26.69	2.4448	26 54 25.1	2.670
5	4 48 53.51	2.4492	26 57 0.6	2.513
6	4 51 20.59	2.4536	26 59 26.7	2.357
7	4 53 47.94	2.4579	27 1 43.4	2.200
8	4 56 15.54	2.4620	27 3 50.7	2.043
9	4 58 43.38	2.4660	27 5 48.4	1.882
10	5 1 11.46	2.4700	27 7 36.5	1.722
11	5 3 39.78	2.4738	27 9 15.0	1.561
12	5 6 8.32	2.4775	27 10 43.8	1.399
13	5 8 37.08	2.4812	27 12 2.9	1.237
14	5 11 6.06	2.4847	27 13 12.2	1.074
15	5 13 35.24	2.4880	27 14 11.8	0.911
16	5 16 4.62	2.4912	27 15 1.5	0.746
17	5 18 34.18	2.4942	27 15 41.3	0.580
18	5 21 3.92	2.4972	27 16 11.1	0.414
19	5 23 33.84	2.5000	27 16 31.0	0.248
20	5 26 3.92	2.5027	27 16 40.9	+0.082
21	5 28 34.16	2.5052	27 16 40.8	−0.086
22	5 31 4.55	2.5077	27 16 30.6	0.254
23	5 33 35.08	2.5100	27 16 10.3	0.422
24	5 36 5.75	2.5122	N.27 15 40.0	0.590

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 29.					SUNDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 36 5.75	2.5122	N.27 15 40.0	0.590	0	6 36 40.22	2.5224	N.26 12 18.8	4.689
1	5 38 36.55	2.5142	27 14 59.5	0.760	1	6 39 11.53	2.5212	26 7 32.4	4.858
2	5 41 7.46	2.5160	27 14 8.8	0.930	2	6 41 42.76	2.5198	26 2 35.8	5.027
3	5 43 38.47	2.5177	27 13 7.9	1.100	3	6 44 13.91	2.5183	25 57 29.1	5.196
4	5 46 9.58	2.5193	27 11 56.8	1.270	4	6 46 44.96	2.5167	25 52 12.3	5.363
5	5 48 40.79	2.5209	27 10 35.5	1.441	5	6 49 15.91	2.5148	25 46 45.5	5.531
6	5 51 12.09	2.5222	27 9 3.9	1.612	6	6 51 46.74	2.5129	25 41 8.6	5.697
7	5 53 43.46	2.5233	27 7 22.1	1.783	7	6 54 17.46	2.5110	25 35 21.8	5.863
8	5 56 14.89	2.5244	27 5 30.0	1.954	8	6 56 48.06	2.5089	25 29 25.0	6.029
9	5 58 46.39	2.5254	27 3 27.6	2.125	9	6 59 18.53	2.5067	25 23 18.3	6.194
10	6 1 17.94	2.5262	27 1 15.0	2.296	10	7 1 48.86	2.5043	25 17 1.7	6.358
11	6 3 49.53	2.5268	26 58 52.1	2.467	11	7 4 19.05	2.5018	25 10 35.3	6.521
12	6 6 21.15	2.5273	26 56 18.9	2.639	12	7 6 49.08	2.4993	25 3 59.2	6.683
13	6 8 52.80	2.5276	26 53 35.4	2.811	13	7 9 18.96	2.4967	24 57 13.3	6.846
14	6 11 24.46	2.5277	26 50 41.6	2.982	14	7 11 48.68	2.4938	24 50 17.7	7.007
15	6 13 56.13	2.5278	26 47 37.5	3.154	15	7 14 18.22	2.4909	24 43 12.5	7.167
16	6 16 27.80	2.5278	26 44 23.1	3.326	16	7 16 47.59	2.4880	24 35 57.7	7.327
17	6 18 59.47	2.5277	26 40 58.4	3.497	17	7 19 16.78	2.4850	24 28 33.3	7.486
18	6 21 31.12	2.5273	26 37 23.5	3.668	18	7 21 45.79	2.4819	24 20 59.4	7.643
19	6 24 2.75	2.5268	26 33 38.3	3.839	19	7 24 14.61	2.4786	24 13 16.1	7.800
20	6 26 34.34	2.5262	26 29 42.8	4.010	20	7 26 43.22	2.4752	24 5 23.4	7.956
21	6 29 5.89	2.5254	26 25 37.1	4.180	21	7 29 11.63	2.4717	23 57 21.4	8.110
22	6 31 37.39	2.5246	26 21 21.2	4.350	22	7 31 39.83	2.4682	23 49 10.2	8.263
23	6 34 8.84	2.5236	26 16 55.1	4.520	23	7 34 7.82	2.4647	23 40 49.8	8.417
24	6 36 40.22	2.5224	N.26 12 18.8	4.689	24	7 36 35.60	2.4611	N.23 32 20.2	8.569

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	7	15	54.8
○ Full Moon, ...	14	11	51.0
☾ Last Quarter, ...	22	7	15.0
● New Moon, ...	30	0	30.8

	d	h
☾ Perigee, ...	9	9.9
☾ Apogee, ...	22	2 7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
3	Sun	W.	29° 58′ 51″	2856	31° 32′ 6″	2843	33° 5′ 38″	2831	34° 39′ 26″	2820
	Regulus	E.	45 34 58	2487	43 53 27	2480	42 11 45	2472	40 29 53	2465
	Spica	E.	99 38 25	2489	97 56 56	2481	96 15 16	2473	94 33 25	2465
4	Sun	W.	42 31 54	2769	44 7 2	2761	45 42 21	2753	47 17 51	2744
	Regulus	E.	31 58 6	2433	30 15 18	2426	28 32 21	2421	26 49 16	2416
	Spica	E.	86 1 35	2431	84 18 44	2424	82 35 44	2418	80 52 35	2411
5	Sun	W.	55 17 55	2708	56 54 24	2701	58 31 2	2695	60 7 49	2689
	Mars	W.	20 57 27	2583	22 36 45	2577	24 16 12	2571	25 55 47	2564
	Pollux	W.	19 22 57	2499	21 4 11	2477	22 45 57	2457	24 28 11	2441
	Spica	E.	72 14 38	2382	70 30 38	2378	68 46 31	2373	67 2 17	2367
6	Sun	W.	68 13 42	2660	69 51 15	2655	71 28 55	2650	73 6 42	2646
	Mars	W.	34 15 40	2538	35 56 1	2533	37 36 28	2529	39 17 1	2524
	Pollux	W.	33 4 17	2384	34 48 15	2375	36 32 25	2367	38 16 47	2360
	Spica	E.	58 19 20	2344	56 34 25	2340	54 49 24	2336	53 4 17	2332
	Antares	E.	104 8 24	2338	102 23 20	2333	100 38 9	2329	98 52 52	2324
7	Sun	W.	81 17 10	2624	82 55 33	2619	84 34 2	2615	86 12 36	2612
	Mars	W.	47 41 19	2503	49 22 28	2499	51 3 42	2496	52 45 1	2492
	Pollux	W.	47 0 56	2331	48 46 10	2326	50 31 31	2322	52 16 59	2317
	Spica	E.	44 17 23	2315	42 31 46	2312	40 46 4	2310	39 0 19	2307
	Antares	E.	90 4 56	2305	88 19 4	2302	86 33 7	2298	84 47 5	2296
8	Sun	W.	94 26 33	2596	96 5 33	2593	97 44 37	2591	99 23 44	2589
	Mars	W.	61 12 45	2477	62 54 30	2475	64 36 19	2472	66 18 11	2470
	Pollux	W.	61 5 47	2299	62 51 48	2296	64 37 54	2293	66 24 4	2291
	Regulus	W.	24 4 3	2291	25 50 16	2287	27 36 35	2283	29 22 59	2281
	Spica	E.	30 10 49	2300	28 24 50	2300	26 38 51	2301	24 52 53	2302
	Antares	E.	75 55 49	2281	74 9 21	2279	72 22 50	2276	70 36 15	2274
9	Sun	W.	107 40 1	2580	109 19 23	2580	110 58 46	2578	112 38 11	2578
	Pollux	W.	75 15 43	2281	77 2 11	2279	78 48 41	2278	80 35 13	2277
	Mars	W.	74 48 18	2461	76 30 26	2460	78 12 36	2459	79 54 47	2458
	Regulus	W.	38 15 54	2270	40 2 38	2268	41 49 24	2267	43 36 12	2266
	Antares	E.	61 42 38	2266	59 55 48	2264	58 8 56	2263	56 22 2	2263
10	Sun	W.	120 55 17	2580	122 34 40	2580	124 14 2	2582	125 53 22	2583
	Pollux	W.	89 28 5	2277	91 14 39	2277	93 1 13	2278	94 47 45	2279
	Mars	W.	88 25 55	2458	90 8 8	2458	91 50 21	2459	93 32 32	2460
	Regulus	W.	52 30 27	2265	54 17 18	2265	56 4 9	2266	57 50 58	2267
	Antares	E.	47 27 25	2262	45 40 29	2263	43 53 35	2264	42 6 42	2265
	α Aquilæ	E.	100 38 55	2931	99 7 16	2925	97 35 29	2920	96 3 36	2918
	Jupiter	E.	106 12 54	2247	104 25 36	2247	102 38 19	2248	100 51 3	2249
11	Sun	W.	134 9 15	2599	135 48 12	2602	137 27 4	2607	139 5 49	2612
	Regulus	W.	66 44 34	2277	68 31 8	2279	70 17 38	2282	72 4 4	2285
	Antares	E.	33 12 50	2274	31 26 13	2277	29 39 40	2280	27 53 11	2284
	α Aquilæ	E.	88 23 47	2921	86 51 55	2927	85 20 10	2933	83 48 33	2941
	Jupiter	E.	91 55 15	2258	90 8 14	2261	88 21 17	2264	86 34 25	2267
12	Regulus	W.	80 54 48	2307	82 40 37	2313	84 26 18	2318	86 11 51	2324

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
3	Sun	W.	36° 13′ 28″	2808	37° 47′ 45″	2798	39° 22′ 15″	2788	40° 56′ 58″	2779
	Regulus	E.	38 47 51	2458	37 5 39	2451	35 23 17	2445	33 40 46	2438
	Spica	E.	92 51 23	2458	91 9 11	2451	89 26 49	2444	87 44 17	2437
4	Sun	W.	48 53 32	2737	50 29 23	2729	52 5 24	2722	53 41 35	2715
	Regulus	E.	25 6 4	2411	23 22 45	2406	21 39 19	2403	19 55 48	2400
	Spica	E.	79 9 16	2405	77 25 49	2400	75 42 14	2394	73 58 30	2388
5	Sun	W.	61 44 44	2683	63 21 47	2677	64 58 58	2672	66 36 16	2666
	Mars	W.	27 35 31	2559	29 15 22	2553	30 55 21	2548	32 35 27	2543
	Pollux	W.	26 10 48	2426	27 53 46	2414	29 37 1	2403	31 20 32	2393
	Spica	E.	65 17 55	2362	63 33 26	2358	61 48 51	2353	60 4 9	2348
6	Sun	W.	74 44 35	2640	76 22 35	2636	78 0 41	2632	79 38 53	2628
	Mars	W.	40 57 41	2520	42 38 27	2515	44 19 19	2512	46 0 16	2507
	Pollux	W.	40 1 19	2353	41 46 1	2348	43 30 51	2342	45 15 50	2337
	Spica	E.	51 19 4	2328	49 33 46	2325	47 48 23	2322	46 2 55	2319
	Antares	E.	97 7 28	2320	95 21 58	2317	93 36 23	2313	91 50 42	2309
7	Sun	W.	87 51 14	2609	89 29 57	2605	91 8 45	2602	92 47 37	2599
	Mars	W.	54 26 25	2489	56 7 53	2486	57 49 26	2483	59 31 3	2480
	Pollux	W.	54 2 33	2313	55 48 13	2309	57 33 59	2306	59 19 50	2302
	Spica	E.	37 14 30	2305	35 28 38	2304	33 42 44	2302	31 56 47	2301
	Antarès	E.	83 0 59	2292	81 14 48	2289	79 28 32	2286	77 42 12	2284
8	Sun	W.	101 2 54	2587	102 42 7	2585	104 21 23	2583	106 0 41	2582
	Mars	W.	68 0 7	2467	69 42 6	2466	71 24 7	2464	73 6 11	2462
	Pollux	W.	68 10 17	2288	69 56 34	2286	71 42 54	2284	73 29 17	2282
	Regulus	W.	31 9 27	2278	32 55 59	2276	34 42 34	2273	36 29 13	2272
	Spica	E.	23 6 57	2305	21 21 5	2309	19 35 18	2314	17 49 39	2322
	Antares	E.	68 49 37	2272	67 2 56	2270	65 16 12	2268	63 29 26	2267
9	Sun	W.	114 17 36	2577	115 57 2	2578	117 36 27	2578	119 15 52	2578
	Pollux	W.	82 21 46	2277	84 8 20	2276	85 54 55	2276	87 41 30	2276
	Mars	W.	81 37 0	2458	83 19 13	2457	85 1 27	2457	86 43 41	2457
	Regulus	W.	45 23 2	2265	47 9 53	2265	48 56 44	2265	50 43 35	2264
	Antares	E.	54 35 8	2262	52 48 13	2262	51 1 17	2262	49 14 21	2262
10	Sun	W.	127 32 40	2585	129 11 55	2588	130 51 6	2591	132 30 13	2595
	Pollux	W.	96 34 15	2281	98 20 43	2282	100 7 9	2284	101 53 32	2287
	Mars	W.	95 14 42	2461	96 56 50	2463	98 38 55	2465	100 20 58	2467
	Regulus	W.	59 37 46	2268	61 24 32	2270	63 11 15	2272	64 57 56	2274
	Antares	E.	40 19 51	2266	38 33 2	2268	36 46 15	2270	34 59 31	2272
	α Aquilæ	E.	94 31 40	2916	92 59 41	2915	91 27 41	2916	89 55 43	2918
	Jupiter	E.	99 3 49	2251	97 16 37	2252	95 29 27	2254	93 42 20	2256
11	Sun	W.	140 44 27	2618	142 22 57	2625	144 1 18	2632	145 39 30	2640
	Regulus	W.	73 50 25	2289	75 36 40	2294	77 22 49	2298	79 8 52	2302
	Antares	E.	26 6 48	2287	24 20 30	2291	22 34 18	2296	20 48 12	2301
	α Aquilæ	E.	82 17 6	2950	80 45 51	2961	79 14 49	2973	77 44 2	2987
	Jupiter	E.	84 47 37	2271	83 0 55	2274	81 14 18	2279	79 27 48	2283
12	Regulus	W.	87 57 15	2331	89 42 29	2337	91 27 34	2344	93 12 29	2352

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
12	Spica	W.	26° 56′ 25″	2327	28° 41′ 45″	2331	30° 27′ 0″	2334	32° 12′ 10″	2339
	α Aquilæ	E.	76 13 33	3002	74 43 23	3019	73 13 34	3039	71 44 9	3059
	Jupiter	E.	77 41 24	2289	75 55 8	2294	74 8 59	2300	72 22 59	2305
13	Regulus	W.	94 57 13	2359	96 41 46	2368	98 26 7	2376	100 10 16	2384
	Spica	W.	40 56 8	2368	42 40 28	2375	44 24 38	2383	46 8 37	2392
	Jupiter	E.	63 35 15	2339	61 50 13	2348	60 5 23	2355	58 20 44	2364
	α Aquilæ	E.	64 24 13	3195	62 57 58	3229	61 32 23	3267	60 7 33	3307
	Fomalhaut	E.	87 24 16	2706	85 47 44	2715	84 11 24	2725	82 35 18	2737
	α Pegasi	E.	109 15 0	2556	107 35 5	2560	105 55 15	2565	104 15 32	2571
14	Spica	W.	54 45 23	2438	56 28 4	2448	58 10 30	2458	59 52 42	2470
	Jupiter	E.	49 40 45	2412	47 57 27	2422	46 14 23	2432	44 31 34	2443
	α Aquilæ	E.	53 16 19	3565	51 57 6	3631	50 39 5	3702	49 22 20	3779
	Fomalhaut	E.	74 39 1	2809	73 4 45	2827	71 30 52	2845	69 57 23	2865
	α Pegasi	E.	95 59 15	2610	94 20 33	2620	92 42 5	2629	91 3 50	2640
	Saturn	E.	104 58 41	2472	103 16 48	2482	101 35 9	2492	99 53 45	2502
15	Spica	W.	68 19 44	2527	70 0 20	2540	71 40 38	2552	73 20 39	2564
	Antares	W.	22 27 0	2522	24 7 43	2534	25 48 9	2547	27 28 17	2559
	Jupiter	E.	36 1 29	2502	34 20 18	2513	32 39 23	2525	30 58 45	2538
	Fomalhaut	E.	62 16 47	2982	60 46 12	3010	59 16 12	3040	57 46 49	3071
	α Pegasi	E.	82 56 29	2702	81 19 52	2716	79 43 34	2731	78 7 35	2746
	Saturn	E.	91 30 36	2561	89 50 48	2573	88 11 16	2585	86 32 1	2599
16	Spica	W.	81 36 21	2629	83 14 36	2643	84 52 32	2657	86 30 10	2670
	Antares	W.	35 44 33	2625	37 22 54	2638	39 0 57	2652	40 38 42	2665
	Fomalhaut	E.	50 30 12	3259	49 5 13	3306	47 41 8	3355	46 18 0	3408
	α Pegasi	E.	70 12 48	2828	68 38 56	2845	67 5 27	2864	65 32 22	2883
	Saturn	E.	78 20 15	2665	76 42 48	2679	75 5 40	2693	73 28 51	2707
	α Arietis	E.	112 14 8	2643	110 36 12	2656	108 58 33	2669	107 21 12	2683
17	Spica	W.	94 33 50	2738	96 9 40	2751	97 45 12	2764	99 20 27	2778
	Antares	W.	48 42 54	2732	50 18 51	2746	51 54 30	2760	53 29 51	2773
	Fomalhaut	E.	39 38 52	3748	38 22 56	3836	37 8 31	3933	35 55 45	4041
	α Pegasi	E.	57 53 17	2987	56 22 48	3010	54 52 48	3034	53 23 17	3059
	Saturn	E.	65 29 24	2777	63 54 26	2792	62 19 47	2806	60 45 27	2820
	α Arietis	E.	99 18 52	2749	97 43 17	2762	96 7 59	2775	94 32 58	2788
	Venus	E.	108 7 51	3179	106 41 17	3193	105 15 0	3208	103 49 0	3221
18	Antares	W.	61 22 20	2836	62 56 1	2849	64 29 25	2861	66 2 34	2873
	α Pegasi	E.	46 3 45	3200	44 37 36	3233	43 12 6	3268	41 47 17	3305
	Saturn	E.	52 58 21	2891	51 25 50	2905	49 53 37	2919	48 21 42	2933
	α Arietis	E.	86 42 11	2852	85 8 51	2865	83 35 47	2877	82 2 59	2889
	Venus	E.	96 43 5	3291	95 18 43	3304	93 54 36	3318	92 30 45	3331
	SUN	E.	137 40 9	3203	136 14 3	3216	134 48 13	3228	133 22 37	3240
19	Antares	W.	73 44 35	2929	75 16 17	2939	76 47 47	2949	78 19 4	2958
	α Aquilæ	W.	35 16 52	5985	36 2 14	5765	36 49 58	5569	37 39 54	5394
	Jupiter	W.	15 32 52	2902	17 5 8	2912	18 37 12	2922	20 9 3	2931
	Saturn	E.	40 46 32	3003	39 16 23	3018	37 46 32	3032	36 16 59	3047
	α Arietis	E.	74 22 41	2946	72 51 20	2956	71 20 12	2966	69 49 17	2977
	Venus	E.	85 35 10	3393	84 12 45	3404	82 50 33	3415	81 28 34	3426

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
12	Spica	W.	33° 57′ 13″	2344	35° 42′ 9″	2349	37° 26′ 58″	2355	39° 11′ 38″	2362
	α Aquilæ	E.	70 15 9	3082	68 46 37	3106	67 18 35	3133	65 51 6	3163
	Jupiter	E.	70 37 7	2311	68 51 24	2318	67 5 51	2325	65 20 28	2332
13	Regulus	W.	101 54 13	2394	103 37 57	2403	105 21 27	2412	107 4 44	2423
	Spica	W.	47 52 23	2401	49 35 57	2409	51 19 19	2418	53 2 28	2428
	Jupiter	E.	56 36 18	2373	54 52 5	2382	53 8 4	2391	51 24 17	2402
	α Aquilæ	E.	58 43 30	3351	57 20 18	3398	55 57 59	3449	54 36 38	3505
	Fomalhaut	E.	80 59 27	2750	79 23 53	2763	77 48 36	2777	76 13 38	2793
	α Pegasi	E.	102 35 57	2577	100 56 31	2585	99 17 15	2592	97 38 9	2601
14	Spica	W.	61 34 38	2481	63 16 18	2492	64 57 43	2503	66 38 52	2515
	Jupiter	E.	42 49 1	2454	41 6 43	2466	39 24 42	2477	37 42 57	2489
	α Aquilæ	E.	48 6 56	3863	46 52 59	3954	45 40 34	4055	44 29 49	4166
	Fomalhaut	E.	68 24 19	2886	66 51 42	2908	65 19 33	2931	63 47 54	2957
	α Pegasi	E.	89 25 50	2652	87 48 5	2663	86 10 36	2676	84 33 24	2689
	Saturn	E.	98 12 35	2514	96 31 41	2525	94 51 3	2537	93 10 41	2549
15	Spica	W.	75 0 23	2577	76 39 49	2590	78 18 58	2603	79 57 49	2617
	Antares	W.	29 8 8	2572	30 47 41	2585	32 26 56	2598	34 5 54	2612
	Jupiter	E.	29 18 25	2551	27 38 22	2564	25 58 37	2577	24 19 10	2590
	Fomalhaut	E.	56 18 4	3105	54 50 0	3139	53 22 38	3177	51 56 1	3217
	α Pegasi	E.	76 31 56	2761	74 56 37	2777	73 21 39	2793	71 47 2	2811
	Saturn	E.	84 53 4	2611	83 14 24	2625	81 36 3	2638	79 58 0	2652
16	Spica	W.	88 7 30	2684	89 44 32	2697	91 21 16	2710	92 57 42	2724
	Antares	W.	42 16 9	2678	43 53 18	2692	45 30 8	2706	47 6 40	2719
	Fomalhaut	E.	44 55 52	3465	43 34 49	3526	42 14 54	3594	40 56 13	3668
	α Pegasi	E.	63 59 42	2903	62 27 27	2923	60 55 37	2944	59 24 14	2965
	Saturn	E.	71 52 20	2721	70 16 8	2735	68 40 15	2749	67 4 40	2763
	α Arietis	E.	105 44 9	2695	104 7 23	2709	102 30 55	2722	100 54 45	2735
17	Spica	W.	100 55 24	2791	102 30 4	2804	104 4 27	2817	105 38 33	2829
	Antares	W.	55 4 54	2786	56 39 40	2798	58 14 10	2811	59 48 23	2824
	Fomalhaut	E.	34 44 46	4161	33 35 43	4296	32 28 47	4446	31 24 7	4617
	α Pegasi	E.	51 54 17	3085	50 25 49	3111	48 57 53	3139	47 30 31	3169
	Saturn	E.	59 11 25	2835	57 37 42	2848	56 4 17	2862	54 31 10	2876
	α Arietis	E.	92 58 15	2801	91 23 49	2815	89 49 40	2827	88 15 47	2840
	Venus	E.	102 23 16	3236	100 57 49	3249	99 32 38	3263	98 7 43	3277
18	Antares	W.	67 35 27	2885	69 8 5	2896	70 40 29	2907	72 12 39	2918
	α Pegasi	E.	40 23 11	3345	38 59 52	3388	37 37 22	3435	36 15 45	3487
	Saturn	E.	46 50 5	2946	45 18 45	2961	43 47 43	2975	42 16 59	2989
	α Arietis	E.	80 30 26	2901	78 58 8	2912	77 26 5	2924	75 54 16	2935
	Venus	E.	91 7 9	3344	89 43 48	3356	88 20 41	3369	86 57 49	3380
	Sun	E.	131 57 15	3252	130 32 7	3263	129 7 12	3274	127 42 30	3286
19	Antares	W.	79 50 9	2968	81 21 2	2977	82 51 44	2985	84 22 15	2993
	α Aquilæ	W.	38 31 53	5240	39 25 45	5101	40 21 22	4977	41 18 35	4866
	Jupiter	W.	21 40 42	2941	23 12 9	2949	24 43 26	2958	26 14 32	2965
	Saturn	E.	34 47 44	3062	33 18 48	3077	31 50 10	3093	30 21 52	3110
	α Arietis	E.	68 18 35	2986	66 48 5	2996	65 17 47	3005	63 47 40	3013
	Venus	E.	80 6 47	3437	78 45 12	3447	77 23 49	3457	76 2 37	3466

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	Sun	E.	126° 18′ 2″	3296	124° 53′ 46″	3307	123° 29′ 43″	3317	122° 5′ 51″	3327
20	Antares	W.	85 52 36	3001	87 22 47	3009	88 52 49	3015	90 22 43	3022
	α Aquilæ	W.	42 17 17	4765	43 17 22	4676	44 18 42	4594	45 21 12	4519
	Jupiter	W.	27 45 28	2973	29 16 14	2981	30 46 51	2987	32 17 20	2994
	α Arietis	E.	62 17 43	3022	60 47 57	3030	59 18 21	3037	57 48 54	3044
	Venus	E.	74 41 35	3476	73 20 44	3485	72 0 3	3493	70 39 31	3500
	Sun	E.	115 9 17	3372	113 46 28	3379	112 23 48	3386	111 1 16	3393
21	α Aquilæ	W.	50 48 24	4234	51 56 18	4191	53 4 53	4150	54 14 7	4112
	Jupiter	W.	39 47 53	3019	41 17 42	3023	42 47 26	3026	44 17 6	3030
	α Arietis	E.	50 23 45	3076	48 55 6	3081	47 26 33	3086	45 58 6	3090
	Venus	E.	63 58 54	3535	62 39 8	3540	61 19 28	3545	59 59 54	3550
	Sun	E.	104 10 24	3421	102 48 31	3425	101 26 43	3429	100 4 59	3432
22	α Aquilæ	W.	60 8 32	3960	61 20 51	3935	62 33 35	3912	63 46 43	3890
	Jupiter	W.	51 44 43	3037	53 14 10	3036	54 43 38	3036	56 13 6	3035
	α Arietis	E.	38 37 5	3109	37 9 6	3111	35 41 10	3114	34 13 18	3117
	Venus	E.	53 23 10	3566	52 3 59	3569	50 44 51	3571	49 25 45	3573
	Sun	E.	93 17 1	3440	91 55 30	3439	90 33 58	3439	89 12 26	3438
23	α Aquilæ	W.	69 57 39	3794	71 12 47	3777	72 28 13	3761	73 43 56	3746
	Jupiter	W.	63 40 55	3023	65 10 39	3019	66 40 28	3015	68 10 22	3010
	Fomalhaut	W.	44 29 9	3814	45 43 57	3772	46 59 28	3734	48 15 39	3697
	α Pegasi	W.	22 55 52	4524	23 59 23	4356	25 5 24	4213	26 13 38	4090
	Venus	E.	42 50 34	3576	41 31 33	3576	40 12 33	3576	38 53 32	3576
	Sun	E.	82 24 18	3425	81 2 30	3422	79 40 38	3417	78 18 41	3412
24	α Aquilæ	W.	80 6 23	3676	81 23 36	3663	82 41 2	3651	83 58 41	3639
	Jupiter	W.	75 41 32	2980	77 12 10	2973	78 42 57	2965	80 13 54	2957
	Fomalhaut	W	54 45 28	3547	56 5 0	3522	57 25 1	3497	58 45 29	3473
	α Pegasi	W.	32 20 10	3675	33 37 24	3617	34 55 40	3564	36 14 54	3516
	Saturn	W.	20 3 55	3228	21 29 31	3195	22 55 46	3167	24 22 35	3141
	Venus	E.	32 18 35	3580	30 59 39	3583	29 40 46	3586	28 21 56	3591
	Sun	E.	71 27 18	3379	70 4 38	3372	68 41 49	3363	67 18 50	3355
25	α Aquilæ	W.	90 30 0	3587	91 48 49	3576	93 7 49	3568	94 26 58	3560
	Jupiter	W.	87 51 22	2910	89 23 28	2899	90 55 48	2889	92 28 21	2678
	Fomalhaut	W.	65 34 14	3365	66 57 11	3345	68 20 30	3325	69 44 12	3306
	α Pegasi	W.	43 2 57	3328	44 26 36	3297	45 50 51	3268	47 15 40	3241
	Saturn	W.	31 43 35	3040	33 12 58	3023	34 42 42	3006	36 12 47	2990
	Sun	E.	60 21 18	3305	58 57 12	3294	57 32 53	3282	56 8 21	3270
26	Jupiter	W.	100 14 45	2818	101 48 49	2806	103 23 9	2793	104 57 46	2780
	Fomalhaut	W.	76 48 3	3218	78 13 51	3202	79 39 58	3185	81 6 25	3168
	α Pegasi	W.	54 27 30	3118	55 55 18	3095	57 23 34	3073	58 52 17	3052
	Saturn	W.	43 48 11	2912	45 20 15	2897	46 52 38	2881	48 25 21	2866
	Sun	E.	49 2 8	3208	47 36 8	3195	46 9 53	3182	44 43 22	3168
27	Fomalhaut	W.	88 23 23	3094	89 51 40	3080	91 20 14	3067	92 49 4	3054
	α Pegasi	W.	66 22 8	2954	67 53 19	2935	69 24 54	2917	70 56 51	2899
	Saturn	W.	56 13 48	2790	57 48 29	2775	59 23 30	2760	60 58 50	2745
	Sun	E.	37 26 41	3099	35 58 30	3086	34 30 3	3072	33 1 19	3058

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Sun	E.	120° 42′ 11″	3337	119° 18′ 42″	3346	117° 55′ 24″	3355	116° 32′ 16″	3363
20	Antares	W.	91 52 28	3028	93 22 6	3034	94 51 36	3039	96 21 0	3044
	α Aquilæ	W.	46 24 47	4452	47 29 22	4389	48 34 53	4333	49 41 15	4282
	Jupiter	W.	33 47 40	3000	35 17 53	3005	36 47 59	3010	38 17 59	3015
	α Arietis	E.	56 19 36	3051	54 50 26	3058	53 21 25	3064	51 52 31	3070
	Venus	E.	69 19 7	3508	67 58 52	3515	66 38 45	3523	65 18 46	3529
	Sun	E.	109 38 52	3400	108 16 35	3406	106 54 25	3412	105 32 22	3416
21	α Aquilæ	W.	55 23 57	4078	56 34 20	4046	57 45 14	4015	58 56 39	3986
	Jupiter	W.	45 46 42	3032	47 16 15	3034	48 45 46	3035	50 15 15	3036
	α Arietis	E.	44 29 44	3095	43 1 28	3098	41 33 16	3101	40 5 8	3105
	Venus	E.	58 40 25	3555	57 21 1	3558	56 1 41	3561	54 42 24	3564
	Sun	E.	98 43 19	3434	97 21 41	3437	96 0 6	3438	94 38 33	3439
22	α Aquilæ	W.	65 0 13	3868	66 14 5	3849	67 28 17	3829	68 42 49	3812
	Jupiter	W.	57 42 35	3034	59 12 6	3032	60 41 39	3030	62 11 15	3026
	α Arietis	E.	32 45 29	3120	31 17 44	3123	29 50 2	3127	28 22 25	3131
	Venus	E.	48 6 41	3574	46 47 38	3575	45 28 36	3576	44 9 35	3576
	Sun	E.	87 50 53	3437	86 29 18	3435	85 7 41	3432	83 46 1	3430
23	α Aquilæ	W.	74 59 55	3730	76 16 10	3716	77 32 40	3703	78 49 24	3689
	Jupiter	W.	69 40 22	3005	71 10 28	2999	72 40 42	2993	74 11 3	2987
	Fomalhaut	W.	49 32 29	3663	50 49 55	3632	52 7 55	3603	53 26 26	3575
	α Pegasi	W.	27 23 49	3984	28 35 44	3892	29 49 12	3811	31 4 3	3738
	Venus	E.	37 34 32	3576	36 15 32	3576	34 56 32	3577	33 37 33	3578
	Sun	E.	76 56 38	3407	75 34 29	3400	74 12 13	3394	72 49 50	3386
24	α Aquilæ	W.	85 16 33	3627	86 34 38	3616	87 52 55	3607	89 11 22	3597
	Jupiter	W.	81 45 1	2948	83 16 19	2939	84 47 48	2930	86 19 29	2920
	Fomalhaut	W.	60 6 24	3450	61 27 44	3427	62 49 30	3406	64 11 40	3385
	α Pegasi	W.	37 35 0	3473	38 55 54	3432	40 17 34	3395	41 39 56	3361
	Saturn	W.	25 49 55	3118	27 17 43	3097	28 45 56	3077	30 14 34	3058
	Venus	E.	27 3 12	3598	25 44 35	3607	24 26 8	3619	23 7 54	3635
	Sun	E.	65 55 42	3345	64 32 23	3336	63 8 53	3326	61 45 12	3315
25	α Aquilæ	W.	95 46 16	3552	97 5 43	3545	98 25 17	3538	99 44 59	3533
	Jupiter	W.	94 1 8	2866	95 34 10	2855	97 7 26	2843	98 40 58	2831
	Fomalhaut	W.	71 8 16	3288	72 32 41	3270	73 57 28	3253	75 22 35	3235
	α Pegasi	W.	48 41 1	3214	50 6 54	3188	51 33 17	3164	53 0 9	3140
	Saturn	W.	37 43 12	2974	39 13 57	2958	40 45 2	2942	42 16 27	2927
	Sun	E.	54 43 35	3259	53 18 35	3247	51 53 21	3234	50 27 52	3221
26	Jupiter	W.	106 32 40	2767	108 7 51	2753	109 43 20	2740	111 19 7	2727
	Fomalhaut	W.	82 33 12	3153	84 0 17	3138	85 27 41	3123	86 55 23	3108
	α Pegasi	W.	60 21 25	3031	61 50 59	3012	63 20 57	2992	64 51 20	2972
	Saturn	W.	49 58 23	2851	51 31 45	2836	53 5 26	2821	54 39 27	2805
	Sun	E.	43 16 35	3154	41 49 31	3141	40 22 11	3127	38 54 34	3114
27	Fomalhaut	W.	94 18 10	3041	95 47 32	3029	97 17 9	3018	98 47 0	3007
	α Pegasi	W.	72 29 11	2882	74 1 53	2864	75 34 58	2848	77 8 24	2831
	Saturn	W.	62 34 30	2730	64 10 30	2715	65 46 50	2700	67 23 30	2685
	Sun	E.	31 32 18	3045	30 3 1	3032	28 33 28	3019	27 3 39	3007

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Merid-ian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	6 41 10.23	10.344	N.23 7 9.4	–10.17	15 46.13	68.78	3 32.33	0.487
Tues.	2	6 45 18.38	10.332	23 2 52.9	11.18	15 46.13	68.74	3 43.89	0.476
Wed.	3	6 49 26.24	10.320	22 58 12.2	12.19	15 46.13	68.70	3 55.16	0.463
Thur.	4	6 53 33.78	10.306	22 53 7.5	13.19	15 46.14	68.66	4 6.11	0.449
Frid.	5	6 57 40.98	10.292	22 47 39.0	14.18	15 46.16	68.62	4 16.72	0.434
Sat.	6	7 1 47.83	10.277	22 41 46.7	15.16	15 46.18	68.57	4 26.99	0.419
Sun.	7	7 5 54.31	10.261	22 35 30.9	16.14	15 46.20	68.52	4 36.88	0.403
Mon.	8	7 10 0.40	10.244	22 28 51.7	17.11	15 46.23	68.47	4 46.38	0.386
Tues.	9	7 14 6.07	10.227	22 21 49.2	18.08	15 46.26	68.41	4 55.47	0.369
Wed.	10	7 18 11.31	10.209	22 14 23.5	19.04	15 46.30	68.35	5 4.13	0.351
Thur.	11	7 22 16.11	10.190	22 6 35.0	19.99	15 46.34	68.29	5 12.34	0.332
Frid.	12	7 26 20.44	10.171	21 58 23.7	20.93	15 46.38	68.23	5 20.09	0.313
Sat.	13	7 30 24.30	10.152	21 49 49.9	21.87	15 46.43	68.16	5 27.38	0.293
Sun.	14	7 34 27.70	10.132	21 40 53.7	22.80	15 46.48	68.10	5 34.20	0.273
Mon.	15	7 38 30.61	10.111	21 31 35.3	23.72	15 46.53	68.03	5 40.54	0.253
Tues.	16	7 42 33.01	10.090	21 21 54.9	24.63	15 46.58	67.96	5 46.38	0.232
Wed.	17	7 46 34.90	10.069	21 11 52.8	25.54	15 46.64	67.88	5 51.69	0.211
Thur.	18	7 50 36.28	10.046	21 1 29.0	26.43	15 46.70	67.81	5 56.49	0.190
Frid.	19	7 54 37.13	10.024	20 50 43.9	27.32	15 46.77	67.73	6 0.77	0.168
Sat.	20	7 58 37.56	10.002	20 39 37.6	28.19	15 46.84	67.65	6 4.53	0.146
Sun.	21	8 2 37.25	9.979	20 28 10.5	29.06	15 46.91	67.57	6 7.76	0.123
Mon.	22	8 6 36.50	9.956	20 16 22.7	29.91	15 46.99	67.49	6 10.44	0.100
Tues.	23	8 10 35.18	9.933	20 4 14.5	30.76	15 47.07	67.41	6 12.56	0.077
Wed.	24	8 14 33.30	9.910	19 51 45.9	31.59	15 47.16	67.33	6 14.11	0.054
Thur.	25	8 18 30.85	9.886	19 38 57.3	32.42	15 47.25	67.24	6 15.10	0.030
Frid.	26	8 22 27.82	9.862	19 25 49.1	33.24	15 47.35	67.16	6 15.51	+0.006
Sat.	27	8 26 24.21	9.838	19 12 21.5	34.04	15 47.45	67.07	6 15.34	–0.019
Sun.	28	8 30 20.01	9.814	18 58 34.9	34.83	15 47.56	66.99	6 14.59	0.044
Mon.	29	8 34 15.22	9.789	18 44 29.3	35.61	15 47.67	66.90	6 13.25	0.069
Tues.	30	8 38 9.83	9.764	18 30 5.2	36.38	15 47.79	66.81	6 11.31	0.094
Wed.	31	8 42 3.82	9.738	18 15 22.9	37.13	15 47.91	66.72	6 8.75	0.120
Thur.	32	8 45 57.19	9.712	N.18 0 22.9	–37.87	15 48.04	66.63	6 5.57	0.145

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.19$ from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	6 41 9.63	10.343	N.23 7 10.0	−10.17	3 32.30	0.487	6 37 37.33
Tues.	2	6 45 17.75	10.331	23 2 53.6	11.18	3 43.86	0.476	6 41 33.89
Wed.	3	6 49 25.58	10.319	22 58 13.0	12.19	3 55.13	0.463	6 45 30.45
Thur.	4	6 53 33.09	10.305	22 53 8.4	13.19	4 6.08	0.449	6 49 27.01
Frid.	5	6 57 40.26	10.291	22 47 40.0	14.18	4 16.69	0.434	6 53 23.57
Sat.	6	7 1 47.09	10.276	22 41 47.9	15.16	4 26.96	0.419	6 57 20.13
Sun.	7	7 5 53.53	10.260	22 35 32.2	16.14	4 36.85	0.403	7 1 16.68
Mon.	8	7 9 59.59	10.243	22 28 53.1	17.11	4 46.35	0.386	7 5 13.24
Tues.	9	7 14 5.23	10.226	22 21 50.7	18.08	4 55.43	0.369	7 9 9.80
Wed.	10	7 18 10.46	10.208	22 14 25.1	19.04	5 4.10	0.351	7 13 6.36
Thur.	11	7 22 15.23	10.189	22 6 36.7	19.99	5 12.31	0.332	7 17 2.92
Frid.	12	7 26 19.54	10.170	21 58 25.6	20.93	5 20.06	0.313	7 20 59.48
Sat.	13	7 30 23.39	10.151	21 49 51.9	21.87	5 27.35	0.293	7 24 56.04
Sun.	14	7 34 26.77	10.131	21 40 55.8	22.80	5 34.17	0.273	7 28 52.60
Mon.	15	7 38 29.66	10.110	21 31 37.5	23.72	5 40.51	0.253	7 32 49.15
Tues.	16	7 42 32.05	10.089	21 21 57.3	24.63	5 46.35	0.232	7 36 45.71
Wed.	17	7 46 33.93	10.068	21 11 55.3	25.54	5 51.67	0.211	7 40 42.26
Thur.	18	7 50 35.29	10.046	21 1 31.6	26.43	5 56.47	0.190	7 44 38.82
Frid.	19	7 54 36.13	10.024	20 50 46.6	27.32	6 0.75	0.168	7 48 35.38
Sat.	20	7 58 36.45	10.002	20 39 40.4	28.19	6 4.51	0.146	7 52 31.94
Sun.	21	8 2 36.23	9.979	20 28 13.4	29.06	6 7.74	0.123	7 56 28.49
Mon.	22	8 6 35.47	9.956	20 16 25.7	29.91	6 10.42	0.100	8 0 25.05
Tues.	23	8 10 34.15	9.933	20 4 17.6	30.76	6 12.54	0.077	8 4 21.61
Wed.	24	8 14 32.27	9.910	19 51 49.2	31.59	6 14.10	0.054	8 8 18.17
Thur.	25	8 18 29.82	9.886	19 39 0.7	32.42	6 15.10	0.030	8 12 14.72
Frid.	26	8 22 26.79	9.862	19 25 52.5	33.24	6 15.51	+0.006	8 16 11.28
Sat.	27	8 26 23.18	9.838	19 12 25.0	34.04	6 15.34	−0.019	8 20 7.84
Sun.	28	8 30 18.99	9.814	18 58 38.5	34.83	6 14.59	0.044	8 24 4.40
Mon.	29	8 34 14.21	9.789	18 44 33.0	35.61	6 13.26	0.069	8 28 0.95
Tues.	30	8 38 8.83	9.764	18 30 8.9	36.38	6 11.32	0.094	8 31 57.51
Wed.	31	8 42 2.83	9.738	18 15 26.7	37.13	6 8.77	0.120	8 35 54.06
Thur.	32	8 45 56.21	9.712	N.18 0 26.7	−37.87	6 5.59	0.145	8 39 50.62

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

Diff. for 1 hour.
$+9^{s}.8565$
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	182	99 27 41.1	27 3.6	143.05	+0.34	0.0072242	+ 0.9	17 19 31.90
2	183	100 24 54.3	24 16.6	143.05	0.21	.0072251	− 0.2	17 15 35.98
3	184	101 22 7.4	21 29.5	143.04	+0.07	.0072234	1.2	17 11 40.07
4	185	102 19 20.3	18 42.3	143.03	−0.06	.0072192	2.3	17 7 44.16
5	186	103 16 33.1	15 54.9	143.03	0.17	.0072126	3.2	17 3 48.24
6	187	104 13 45.7	13 7.3	143.02	0.26	.0072037	4.1	16 59 52.34
7	188	105 10 58.1	10 19.5	143.01	0.34	.0071927	5.0	16 55 56.43
8	189	106 8 10.3	7 31.5	143.01	0.39	.0071796	5.8	16 52 0.52
9	190	107 5 22.4	4 43.4	143.00	0.41	.0071646	6.7	16 48 4.61
10	191	108 2 34.5	1 55.3	143.01	0.40	.0071478	7.4	16 44 8.68
11	192	108 59 46.7	59 7.3	143.01	0.35	.0071293	8.1	16 40 12.76
12	193	109 56 59.0	56 19.4	143.01	0.27	.0071093	8.6	16 36 16.85
13	194	110 54 11.4	53 31.6	143.02	0.18	.0070877	9.3	16 32 20.95
14	195	111 51 24.0	50 44.1	143.03	−0.06	.0070647	9.8	16 28 25.03
15	196	112 48 36.9	47 56.8	143.05	+0.07	.0070403	10.4	16 24 29.12
16	197	113 45 50.3	45 10.0	143.07	0.21	.0070145	11.0	16 20 33.21
17	198	114 43 4.3	42 23.8	143.09	0.34	.0069873	11.6	16 16 37.30
18	199	115 40 18.8	39 38.1	143.12	0.47	.0069586	12.3	16 12 41.38
19	200	116 37 33.9	36 53.1	143.15	0.58	.0069284	12.9	16 8 45.47
20	201	117 34 49.9	34 8.9	143.19	0.67	.0068965	13.7	16 4 49.56
21	202	118 32 6.8	31 25.6	143.22	0.74	.0068628	14.4	16 0 53.65
22	203	119 29 24.6	28 43.2	143.26	0.78	.0068274	15.2	15 56 57.74
23	204	120 26 43.3	26 1.8	143.30	0.79	.0067900	16.0	15 53 1.82
24	205	121 24 2.9	23 21.3	143.33	0.77	.0067506	16.9	15 49 5.91
25	206	122 21 23.4	20 41.6	143.37	0.72	.0067090	17.9	15 45 10.00
26	207	123 18 44.8	18 2.8	143.41	0.64	.0066650	18.8	15 41 14.09
27	208	124 16 7.1	15 24.9	143.45	0.54	.0066186	19.8	15 37 18.18
28	209	125 13 30.3	12 48.0	143.48	0.41	.0065698	20.8	15 33 22.27
29	210	126 10 54.3	10 11.9	143.52	0.28	.0065185	21.8	15 29 26.36
30	211	127 8 19.1	7 36.5	143.55	0.14	.0064648	22.9	15 25 30.45
31	212	128 5 44.8	5 2.0	143.59	+0.01	.0064086	23.9	15 21 34.54
32	213	129 3 11.3	2 28.3	143.62	−0.10	0.0063500	−24.9	15 17 38.63

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0^d.0.

Diff. for 1 hour.
—9^s.8296
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 0.5	16 4.3	58 38.7	+1.24	58 52.6	+1.07	1 1.3	2.38	1.0
2	16 7.5	16 10.2	59 4.4	0.89	59 14.0	0.71	1 57.2	2.26	2.0
3	16 12.2	16 13.6	59 21.4	0.53	59 26.6	0.35	2 50.1	2.14	3.0
4	16 14.4	16 14.8	59 29.8	+0.17	59 30.9	+0.01	3 40.4	2.05	4.0
5	16 14.5	16 13.9	59 30.1	−0.13	59 27.7	−0.27	4 29.2	2.01	5.0
6	16 12.8	16 11.3	59 23.7	0.39	59 18.4	0.50	5 17.7	2.03	6.0
7	16 9.5	16 7.4	59 11.8	0.60	59 4.1	0.68	6 7.2	2.10	7.0
8	16 5.1	16 2.5	58 55.5	0.76	58 45.9	0.84	6 58.8	2.21	8.0
9	15 59.6	15 56.6	58 35.5	0.91	58 24.2	0.97	7 53.2	2.33	9.0
10	15 53.4	15 49.8	58 12.2	1.03	57 59.4	1.09	8 50.2	2.43	10.0
11	15 46.2	15 42.4	57 45.9	1.15	57 31.8	1.20	9 48.9	2.45	11.0
12	15 38.3	15 34.2	57 17.1	1.25	57 1.8	1.29	10 47.1	2.39	12.0
13	15 29.9	15 25.6	56 46.2	1.31	56 30.3	1.33	11 43.0	2.25	13.0
14	15 21.3	15 16.9	56 14.4	1.33	55 58.5	1.32	12 35.1	2.08	14.0
15	15 12.7	15 8.6	55 42.9	1.28	55 27.8	1.23	13 23.2	1.92	15.0
16	15 4.6	15 1.0	55 13.4	1.16	55 0.0	1.07	14 7.6	1.79	16.0
17	14 57.7	14 54.7	54 47.8	0.96	54 37.0	0.83	14 49.3	1.69	17.0
18	14 52.2	14 50.3	54 27.9	0.69	54 20.6	0.52	15 29.3	1.64	18.0
19	14 48.9	14 48.0	54 15.4	−0 35	54 12.4	−0.16	16 8.6	1.64	19.0
20	14 47.8	14 48.3	54 11.7	+0.04	54 13.4	+0.25	16 48.4	1.69	20.0
21	14 49.5	14 51.3	54 17.6	0.46	54 24.4	0.67	17 29.9	1.78	21.0
22	14 53.9	14 57.1	54 33.8	0.88	54 45.6	1.09	18 14.1	1.91	22.0
23	15 1.0	15 5.5	54 59.9	1.29	55 16.6	1.48	19 1.9	2.08	23.0
24	15 10.6	15 16.3	55 35.3	1.65	55 56.0	1.80	19 53.7	2.25	24.0
25	15 22.3	15 28.8	56 18.3	1.92	56 41.9	2.01	20 49.3	2.39	25.0
26	15 35.4	15 42.2	57 6.5	2.07	57 31.5	2.09	21 47.6	2.46	26.0
27	15 49.0	15 55.7	57 56.4	2.06	58 20.8	1.99	22 46.7	2.44	27.0
28	16 2.0	16 7.9	58 44.0	1.88	59 5.7	1.72	23 44.5	2.36	28.0
29	16 13.2	16 17.8	59 25.2	1.52	59 42.0	1.28	δ		29.0
30	16 21.6	16 24.4	59 55.9	1.02	60 6.5	0.74	0 39.9	2.25	0.6
31	16 26.4	16 27.4	60 13.7	+0.45	60 17.3	+0.16	1 32.7	2.15	1.6
32	16 27 5	16 26.6	60 17.6	−0.12	60 14.5	−0.39	2 23.5	2.09	2.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 36 35.60	2.4611	N.23 32 20.2	8.569
1	7 39 3.15	2.4573	23 23 41.5	8.719
2	7 41 30.47	2.4535	23 14 53.9	8.868
3	7 43 57.57	2.4497	23 5 57.4	9.016
4	7 46 24.43	2.4457	22 56 52.0	9.164
5	7 48 51.06	2.4417	22 47 37.7	9.311
6	7 51 17.44	2.4376	22 38 14.7	9.456
7	7 53 43.57	2.4334	22 28 43.0	9.599
8	7 56 9.45	2.4293	22 19 2.8	9.741
9	7 58 35.09	2.4251	22 9 14.1	9.882
10	8 1 0.47	2.4208	21 59 17.0	10.022
11	8 3 25.59	2.4165	21 49 11.5	10.161
12	8 5 50.45	2.4122	21 38 57.7	10.298
13	8 8 15.05	2.4077	21 28 35.7	10.434
14	8 10 39.38	2.4032	21 18 5.6	10.568
15	8 13 3.44	2.3987	21 7 27.5	10.702
16	8 15 27.23	2.3942	20 56 41.4	10.833
17	8 17 50.75	2.3897	20 45 47.5	10.963
18	8 20 14.00	2.3852	20 34 45.8	11.092
19	8 22 36.97	2.3806	20 23 36.4	11.220
20	8 24 59.67	2.3760	20 12 19.4	11.347
21	8 27 22.09	2.3713	20 0 54.8	11.472
22	8 29 44.23	2.3667	19 49 22.8	11.595
23	8 32 6.09	2.3620	N.19 37 43.4	11.717

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 34 27.67	2.3573	N.19 25 56.8	11.837
1	8 36 48.97	2.3527	19 14 3.0	11.956
2	8 39 9.99	2.3480	19 2 2.1	12.073
3	8 41 30.73	2.3433	18 49 54.2	12.189
4	8 43 51.19	2.3386	18 37 39.4	12.303
5	8 46 11.36	2.3339	18 25 17.8	12.416
6	8 48 31.25	2.3233	18 12 49.5	12.527
7	8 50 50.87	2.3246	18 0 14.5	12.637
8	8 53 10.20	2.3198	17 47 33.0	12.745
9	8 55 29.25	2.3152	17 34 45.1	12.852
10	8 57 48.02	2.3106	17 21 50.8	12.957
11	9 0 6.52	2.3060	17 8 50.2	13.061
12	9 2 24.74	2.3013	16 55 43.5	13.162
13	9 4 42.68	2.2967	16 42 30.8	13.262
14	9 7 0.35	2.2922	16 29 12.0	13.362
15	9 9 17.74	2.2876	16 15 47.3	13.460
16	9 11 34.86	2.2831	16 2 16.8	13.555
17	9 13 51.71	2.2787	15 48 40.7	13.648
18	9 16 8.30	2.2742	15 34 59.0	13.741
19	9 18 24.62	2.2697	15 21 11.8	13.832
20	9 20 40.67	2.2653	15 7 19.2	13.922
21	9 22 56.46	2.2610	14 53 21.2	14.009
22	9 25 11.99	2.2567	14 39 18.1	14.094
23	9 27 27.27	2.2525	14 25 9.9	14.179
24	9 29 42.29	2.2482	N.14 10 56.6	14.262

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 29 42.29	2.2482	N.14 10 56.6	14.262
1	9 31 57.05	2.2440	13 56 38.4	14.343
2	9 34 11.57	2.2399	13 42 15.4	14.423
3	9 36 25.84	2.2358	13 27 47.7	14.501
4	9 38 39.86	2.2317	13 13 15.3	14.577
5	9 40 53.64	2.2277	12 58 38.4	14.652
6	9 43 7.19	2.2238	12 43 57.0	14.726
7	9 45 20.50	2.2199	12 29 11.3	14.797
8	9 47 33.58	2.2160	12 14 21.4	14.857
9	9 49 46.42	2.2122	11 59 27.3	14.935
10	9 51 59.04	2.2085	11 44 29.2	15.002
11	9 54 11.44	2.2048	11 29 27.1	15.067
12	9 56 23.62	2.2012	11 14 21.2	15.130
13	9 58 35.59	2.1977	10 59 11.5	15.192
14	10 0 47.35	2.1942	10 43 58.2	15.252
15	10 2 58.89	2.1907	10 28 41.3	15.311
16	10 5 10.23	2.1873	10 13 20.9	15.368
17	10 7 21.37	2.1841	9 57 57.1	15.423
18	10 9 32.32	2.1809	9 42 30.1	15.477
19	10 11 43.08	2.1777	9 26 59.9	15.529
20	10 13 53.65	2.1746	9 11 26.6	15.580
21	10 16 4.03	2.1715	8 55 50.3	15.629
22	10 18 14.23	2.1686	8 40 11.1	15.677
23	10 20 24.26	2.1657	N. 8 24 29.1	15.723

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 22 34.12	2.1629	N. 8 8 44.4	15.767
1	10 24 43.81	2.1602	7 52 57.1	15.809
2	10 26 53.34	2.1575	7 37 7.3	15.851
3	10 29 2.71	2.1549	7 21 15.0	15.891
4	10 31 11.93	2.1524	7 5 20.4	15.928
5	10 33 21.00	2.1499	6 49 23.6	15.965
6	10 35 29.92	2.1475	6 33 24.6	16.000
7	10 37 38.70	2.1453	6 17 23.6	16.033
8	10 39 47.35	2.1431	6 1 20.6	16.065
9	10 41 55.87	2.1409	5 45 15.8	16.095
10	10 44 4.26	2.1388	5 29 9.2	16.124
11	10 46 12.53	2.1368	5 13 0.9	16.151
12	10 48 20.68	2.1349	4 56 51.1	16.176
13	10 50 28.72	2.1332	4 40 39.8	16.200
14	10 52 36.66	2.1314	4 24 27.1	16 223
15	10 54 44.49	2.1297	4 8 13.0	16.245
16	10 56 52.23	2.1282	3 51 57.7	16.264
17	10 58 59.87	2.1267	3 35 41.3	16.282
18	11 1 7.43	2.1253	3 19 23.9	16.298
19	11 3 14.91	2.1240	3 3 5.5	16.313
20	11 5 22.31	2.1227	2 46 46.3	16.327
21	11 7 29.63	2.1215	2 30 26.3	16.339
22	11 9 36.89	2.1205	2 14 5.6	16.350
23	11 11 44.09	2.1195	1 57 44.3	16.358
24	11 13 51.23	2.1186	N. 1 41 22.6	16.365

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 13 51.23	2.1186	N. 1 41 22.6	16.365
1	11 15 58.32	2.1177	1 25 0.5	16.372
2	11 18 5.36	2.1170	1 8 38.0	16.377
3	11 20 12.36	2.1163	0 52 15.3	16.379
4	11 22 19.32	2.1157	0 35 52.5	16.380
5	11 24 26.25	2.1152	0 19 29.7	16.380
6	11 26 33.15	2.1148	N. 0 3 6.9	16.379
7	11 28 40.03	2.1145	S. 0 13 15.8	16.376
8	11 30 46.89	2.1142	0 29 38.2	16.371
9	11 32 53.74	2.1141	0 46 0.3	16.365
10	11 35 0.58	2.1141	1 2 22.0	16.357
11	11 37 7.43	2.1142	1 18 43.2	16.348
12	11 39 14.28	2.1143	1 35 3.8	16.337
13	11 41 21.14	2.1144	1 51 23.7	16.326
14	11 43 28.01	2.1147	2 7 42.9	16.313
15	11 45 34.90	2.1150	2 24 1.3	16.298
16	11 47 41.81	2.1154	2 40 18.7	16.282
17	11 49 48.75	2.1160	2 56 35.1	16.264
18	11 51 55.73	2.1167	3 12 50.4	16.245
19	11 54 2.75	2.1173	3 29 4.5	16.224
20	11 56 9.81	2.1181	3 45 17.3	16.202
21	11 58 16.92	2.1190	4 1 28.8	16.179
22	12 0 24.09	2.1200	4 17 38.8	16.153
23	12 2 31.32	2.1210	S. 4 33 47.2	16.127

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 4 38.61	2.1221	S. 4 49 54.0	16.099
1	12 6 45.97	2.1233	5 5 59.1	16.070
2	12 8 53.41	2.1246	5 22 2.4	16.039
3	12 11 0.92	2.1259	5 38 3.8	16.007
4	12 13 8.52	2.1274	5 54 3.2	15.973
5	12 15 16.21	2.1289	6 10 0.5	15.938
6	12 17 23.99	2.1305	6 25 55.7	15.902
7	12 19 31.87	2.1322	6 41 48.7	15.863
8	12 21 39.86	2.1340	6 57 39.3	15.823
9	12 23 47.95	2.1358	7 13 27.5	15.782
10	12 25 56.15	2.1378	7 29 13.2	15.740
11	12 28 4.48	2.1398	7 44 56.3	15.696
12	12 30 12.93	2.1419	8 0 36.7	15.651
13	12 32 21.51	2.1441	8 16 14.4	15.604
14	12 34 30.22	2.1463	8 31 49.2	15.556
15	12 36 39.06	2.1485	8 47 21.1	15.507
16	12 38 48.04	2.1509	9 2 50.0	15.456
17	12 40 57.17	2.1534	9 18 15.8	15.403
18	12 43 6.45	2.1559	9 33 38.4	15.349
19	12 45 15.88	2.1586	9 48 57.7	15.294
20	12 47 25.48	2.1613	10 4 13.7	15.237
21	12 49 35.24	2.1640	10 19 26.2	15.179
22	12 51 45.16	2.1668	10 34 35.2	15.120
23	12 53 55.26	2.1697	10 49 40.6	15.059
24	12 56 5.53	2.1727	S. 11 4 42.3	14.997

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 56 5.53	2.1727	S. 11 4 42.3	14.997
1	12 58 15.98	2.1757	11 19 40.2	14.933
2	13 0 26.62	2.1788	11 34 34.2	14.867
3	13 2 37.44	2.1820	11 49 24.2	14.800
4	13 4 48.46	2.1852	12 4 10.2	14.732
5	13 6 59.67	2.1885	12 18 52.1	14.662
6	13 9 11.08	2.1918	12 33 29.7	14.591
7	13 11 22.69	2.1952	12 48 3.0	14.518
8	13 13 34.51	2.1987	13 2 31.9	14.445
9	13 15 46.54	2.2023	13 16 56.4	14.370
10	13 17 58.79	2.2059	13 31 16.3	14.292
11	13 20 11.25	2.2095	13 45 31.5	14.214
12	13 22 23.93	2.2133	13 59 42.0	14.135
13	13 24 36.84	2.2171	14 13 47.7	14.054
14	13 26 49.98	2.2208	14 27 48.5	13.971
15	13 29 3.34	2.2247	14 41 44.2	13.886
16	13 31 16.94	2.2286	14 55 34.8	13.801
17	13 33 30.77	2.2325	15 9 20.3	13.715
18	13 35 44.84	2.2365	15 23 0.6	13.627
19	13 37 59.15	2.2406	15 36 35.5	13.537
20	13 40 13.71	2.2447	15 50 5.0	13.445
21	13 42 28.52	2.2488	16 3 28.9	13.352
22	13 44 43.57	2.2530	16 16 47.2	13.258
23	13 46 58.88	2.2572	S. 16 29 59.9	13.164

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 49 14.44	2.2615	S. 16 43 6.9	13.067
1	13 51 30.26	2.2658	16 56 8.0	12.969
2	13 53 46.34	2.2701	17 9 3.2	12.869
3	13 56 2.67	2.2744	17 21 52.3	12.768
4	13 58 19.27	2.2788	17 34 35.3	12.666
5	14 0 36.13	2.2832	17 47 12.2	12.562
6	14 2 53.26	2.2877	17 59 42.8	12.457
7	14 5 10.66	2.2922	18 12 7.1	12.351
8	14 7 28.32	2.2966	18 24 24.9	12.243
9	14 9 46.25	2.3011	18 36 36.2	12.133
10	14 12 4.45	2.3057	18 48 40.9	12.022
11	14 14 22.93	2.3102	19 0 38.9	11.911
12	14 16 41.68	2.3147	19 12 30.2	11.798
13	14 19 0.70	2.3193	19 24 14.6	11.683
14	14 21 20.00	2.3239	19 35 52.1	11.567
15	14 23 39.57	2.3285	19 47 22.6	11.449
16	14 25 59.42	2.3331	19 58 46.0	11.331
17	14 28 19.54	2.3376	20 10 2.3	11.211
18	14 30 39.93	2.3422	20 21 11.3	11.089
19	14 33 0.60	2.3467	20 32 13.0	10.967
20	14 35 21.54	2.3513	20 43 7.3	10.843
21	14 37 42.76	2.3559	20 53 54.1	10.718
22	14 40 4.25	2.3604	21 4 33.4	10.591
23	14 42 26.01	2.3650	21 15 5.0	10.462
24	14 44 48.05	2.3696	S. 21 25 28.9	10.333

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 44 48.05	2.3696	S.21 25 28.9	10.333
1	14 47 10.36	2.3741	21 35 45.0	10.203
2	14 49 32.94	2.3785	21 45 53.3	10.072
3	14 51 55.78	2.3829	21 55 53.6	9.939
4	14 54 18.89	2.3874	22 5 45.9	9.805
5	14 56 42.27	2.3918	22 15 30.2	9.670
6	14 59 5.91	2.3962	22 25 6.3	9.533
7	15 1 29.82	2.4006	22 34 34.1	9.395
8	15 3 53.98	2.4048	22 43 53.7	9.257
9	15 6 18.40	2.4091	22 53 4.9	9.116
10	15 8 43.07	2.4133	23 2 7.6	8.975
11	15 11 8.00	2.4176	23 11 1.9	8.833
12	15 13 33.18	2.4217	23 19 47.6	8.689
13	15 15 58.60	2.4258	23 28 24.6	8.545
14	15 18 24.27	2.4298	23 36 53.0	8.400
15	15 20 50.18	2.4337	23 45 12.6	8.253
16	15 23 16.32	2.4376	23 53 23.4	8.106
17	15 25 42.69	2.4415	24 1 25.3	7.957
18	15 28 9.30	2.4453	24 9 18.2	7.807
19	15 30 36.13	2.4490	24 17 2.1	7.657
20	15 33 3.18	2.4527	24 24 37.0	7.505
21	15 35 30.45	2.4562	24 32 2.7	7.352
22	15 37 57.93	2.4597	24 39 19.2	7.198
23	15 40 25.62	2.4632	S.24 46 26.5	7.045

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 42 53.52	2.4666	S.24 53 24.6	6.890
1	15 45 21.61	2.4698	25 0 13.3	6.733
2	15 47 49.89	2.4730	25 6 52.6	6.576
3	15 50 18.37	2.4762	25 13 22.4	6.418
4	15 52 47.03	2.4792	25 19 42.8	6.260
5	15 55 15.87	2.4820	25 25 53.6	6.100
6	15 57 44.87	2.4848	25 31 54.8	5.940
7	16 0 14.04	2.4875	25 37 46.4	5.779
8	16 2 43.37	2.4902	25 43 28.3	5.618
9	16 5 12.86	2.4928	25 49 0.6	5.457
10	16 7 42.50	2.4952	25 54 23.1	5.293
11	16 10 12.28	2.4974	25 59 35.8	5.129
12	16 12 42.19	2.4996	26 4 38.6	4.965
13	16 15 12.23	2.5017	26 9 31.6	4.801
14	16 17 42.40	2.5037	26 14 14.7	4.636
15	16 20 12.68	2.5056	26 18 47.9	4.470
16	16 22 43.07	2.5073	26 23 11.1	4.304
17	16 25 13.56	2.5089	26 27 24.4	4.138
18	16 27 44.14	2.5104	26 31 27.7	3.971
19	16 30 14.81	2.5118	26 35 20.9	3.803
20	16 32 45.56	2.5132	26 39 4.1	3.636
21	16 35 16.39	2.5143	26 42 37.2	3.467
22	16 37 47.28	2.5153	26 46 0.2	3.298
23	16 40 18.23	2.5162	26 49 13.0	3.129
24	16 42 49.22	2.5169	S.26 52 15.7	2.961

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 42 49.22	2.5169	S.26 52 15.7	2.961
1	16 45 20.26	2.5176	26 55 8.3	2.792
2	16 47 51.34	2.5182	26 57 50.7	2.622
3	16 50 22.44	2.5185	27 0 22.9	2.452
4	16 52 53.56	2.5187	27 2 45.0	2.283
5	16 55 24.69	2.5188	27 4 56.9	2.113
6	16 57 55.82	2.5188	27 6 58.6	1.943
7	17 0 26.95	2.5187	27 8 50.1	1.773
8	17 2 58.07	2.5184	27 10 31.4	1.604
9	17 5 29.16	2.5179	27 12 2.6	1.435
10	17 8 0.22	2.5174	27 13 23.6	1.265
11	17 10 31.25	2.5167	27 14 34.4	1.095
12	17 13 2.23	2.5159	27 15 35.0	0.925
13	17 15 33.16	2.5150	27 16 25.4	0.756
14	17 18 4.03	2.5139	27 17 5.7	0.587
15	17 20 34.83	2.5127	27 17 35.9	0.418
16	17 23 5.55	2.5113	27 17 55.9	0.249
17	17 25 36.18	2.5098	27 18 5.8	−0.082
18	17 28 6.72	2.5082	27 18 5.7	+0.086
19	17 30 37.16	2.5064	27 17 55.5	0.254
20	17 33 7.49	2.5045	27 17 35.2	0.422
21	17 35 37.70	2.5024	27 17 4.8	0.590
22	17 38 7.78	2.5002	27 16 24.4	0.756
23	17 40 37.73	2.4980	S.27 15 34.1	0.922

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 43 7.54	2.4956	S.27 14 33.8	1.087
1	17 45 37.20	2.4930	27 13 23.6	1.252
2	17 48 6.70	2.4903	27 12 3.5	1.417
3	17 50 36.04	2.4876	27 10 33.6	1.581
4	17 53 5.21	2.4847	27 8 53.8	1.744
5	17 55 34.20	2.4816	27 7 4.3	1.907
6	17 58 3.00	2.4784	27 5 5.0	2.069
7	18 0 31.60	2.4751	27 2 56.0	2.230
8	18 3 0.01	2.4717	27 0 37.4	2.390
9	18 5 28.21	2.4682	26 58 9.2	2.550
10	18 7 56.19	2.4645	26 55 31.4	2.710
11	18 10 23.95	2.4607	26 52 44.0	2.868
12	18 12 51.48	2.4568	26 49 47.2	3.025
13	18 15 18.77	2.4528	26 46 41.0	3.182
14	18 17 45.82	2.4488	26 43 25.4	3.338
15	18 20 12.63	2.4447	26 40 0.4	3.494
16	18 22 39.18	2.4403	26 36 26.1	3.648
17	18 25 5.47	2.4359	26 32 42.7	3.800
18	18 27 31.49	2.4314	26 28 50.1	3.952
19	18 29 57.24	2.4268	26 24 48.4	4.103
20	18 32 22.71	2.4221	26 20 37.7	4.254
21	18 34 47.89	2.4173	26 16 17.9	4.404
22	18 37 12.78	2.4124	26 11 49.2	4.552
23	18 39 37.38	2.4075	26 7 11.7	4.699
24	18 42 1.68	2.4024	S.26 2 25.4	4.845

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 42 1.68	2.4024	S.26 2 25.4	4.845
1	18 44 25.67	2.3973	25 57 30.3	4.990
2	18 46 49.35	2.3921	25 52 26.6	5.134
3	18 49 12.72	2.3868	25 47 14.3	5.277
4	18 51 35.77	2.3814	25 41 53.4	5.416
5	18 53 58.49	2.3759	25 36 24.1	5.558
6	18 56 20.88	2.3704	25 30 46.4	5.697
7	18 58 42.94	2.3648	25 25 0.4	5.836
8	19 1 4.66	2.3592	25 19 6.1	5.973
9	19 3 26.05	2.3536	25 13 3.6	6.109
10	19 5 47.09	2.3478	25 6 53.0	6.244
11	19 8 7.78	2.3419	25 0 34.3	6.377
12	19 10 28.12	2.3360	24 54 7.7	6.509
13	19 12 48.10	2.3301	24 47 33.2	6.640
14	19 15 7.73	2.3242	24 40 50.9	6.770
15	19 17 27.00	2.3181	24 34 0.8	6.898
16	19 19 45.90	2.3120	24 27 3.1	7.025
17	19 22 4.44	2.3059	24 19 57.8	7.152
18	19 24 22.61	2.2997	24 12 44.9	7.277
19	19 26 40.41	2.2935	24 5 24.6	7.399
20	19 28 57.83	2.2872	23 57 57.0	7.521
21	19 31 14.88	2.2810	23 50 22.1	7.642
22	19 33 31.55	2.2747	23 42 40.0	7.761
23	19 35 47.84	2.2684	S.23 34 50.8	7.879

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 38 3.76	2.2622	S.23 26 54.5	7.996
1	19 40 19.30	2.2558	23 18 51.3	8.111
2	19 42 34.45	2.2493	23 10 41.2	8.226
3	19 44 49.21	2.2428	23 2 24.2	8.339
4	19 47 3.59	2.2365	22 54 0.5	8.450
5	19 49 17.59	2.2301	22 45 30.2	8.560
6	19 51 31.20	2.2236	22 36 53.3	8.669
7	19 53 44.42	2.2172	22 28 9.9	8.777
8	19 55 57.26	2.2107	22 19 20.1	8.883
9	19 58 9.71	2.2042	22 10 24.0	8 988
10	20 0 21.77	2.1977	22 1 21.6	9.091
11	20 2 33.44	2.1913	21 52 13.1	9.192
12	20 4 44.73	2.1849	21 42 58.5	9.293
13	20 6 55.63	2.1784	21 33 37.9	9.393
14	20 9 6.14	2.1719	21 24 11.3	9.492
15	20 11 16.26	2.1655	21 14 38.9	9.588
16	20 13 26.00	2.1591	21 5 0.8	9.683
17	20 15 35.35	2.1527	20 55 16.9	9.778
18	20 17 44.32	2.1462	20 45 27.4	9.871
19	20 19 52.90	2.1398	20 35 32.4	9.962
20	20 22 1.10	2.1335	20 25 31.9	10.052
21	20 24 8.92	2.1272	20 15 26.1	10.141
22	20 26 16.36	2.1208	20 5 15.0	10.228
23	20 28 23.42	2.1145	19 54 58.7	10.315
24	20 30 30.10	2.1082	S.19 44 37.2	10.400

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 30 30.10	2.1082	S.19 44 37.2	10.400
1	20 32 36.40	2.1019	19 34 10.7	10.483
2	20 34 42.33	2.0957	19 23 39.2	10.566
3	20 36 47.89	2.0896	19 13 2.8	10.647
4	20 38 53.08	2.0834	19 2 21.6	10.727
5	20 40 57.90	2.0773	18 51 35.6	10.806
6	20 43 2.35	2.0712	18 40 44.9	10.883
7	20 45 6.44	2.0651	18 29 49.6	10.959
8	20 47 10.16	2.0590	18 18 49.8	11.033
9	20 49 13.52	2.0530	18 7 45.6	11.107
10	20 51 16.52	2.0471	17 56 37.0	11.179
11	20 53 19.17	2.0411	17 45 24.1	11.251
12	20 55 21.46	2.0352	17 34 6.9	11.321
13	20 57 23.40	2.0294	17 22 45.6	11.389
14	20 59 24.99	2.0237	17 11 20.2	11.457
15	21 1 26.24	2.0179	16 59 50.8	11.523
16	21 3 27.14	2.0123	16 48 17.5	11.588
17	21 5 27.71	2.0067	16 36 40.3	11.652
18	21 7 27.94	2.0010	16 24 59.3	11.714
19	21 9 27.83	1.9954	16 13 14.6	11.775
20	21 11 27.39	1.9900	16 1 26.3	11.836
21	21 13 26.63	1.9846	15 49 34.3	11.896
22	21 15 25.54	1.9792	15 37 38.8	11.953
23	21 17 24.13	1.9738	S.15 25 39.9	12.010

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 19 22.39	1.9684	S.15 13 37.6	12.066
1	21 21 20.34	1.9632	15 1 32.0	12.120
2	21 23 17.98	1.9581	14 49 23.2	12.174
3	21 25 15.31	1.9530	14 37 11.1	12.227
4	21 27 12.34	1.9479	14 24 55.9	12.278
5	21 29 9.06	1 9428	14 12 37.7	12.328
6	21 31 5.48	1.9379	14 0 16.5	12.377
7	21 33 1.61	1.9331	13 47 52.4	12.426
8	21 34 57.45	1.9282	13 35 25.4	12.473
9	21 36 52.99	1.9234	13 22 55.6	12.519
10	21 38 48.25	1.9188	13 10 23.1	12.564
11	21 40 43.24	1.9142	12 57 47.9	12.608
12	21 42 37.95	1.9095	12 45 10.1	12.651
13	21 44 32.38	1.9050	12 32 29.8	12.693
14	21 46 26.55	1.9006	12 19 47.0	12.734
15	21 48 20.45	1.8962	12 7 1.7	12.775
16	21 50 14.09	1.8918	11 54 14.0	12.813
17	21 52 7.47	1.8875	11 41 24.1	12.850
18	21 54 0.59	1.8833	11 28 32.0	12.887
19	21 55 53.46	1.8792	11 15 37.7	12.923
20	21 57 46.09	1.8752	11 2 41.2	12.959
21	21 59 38.48	1.8712	10 49 42.6	12.993
22	22 1 30.63	1.8672	10 36 42.0	13.026
23	22 3 22.54	1.8633	10 23 39.5	13.058
24	22 5 14.22	1.8595	S.10 10 35.0	13.090

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 5 14.22	1.8595	S. 10 10 35.0	13.090
1	22 7 5.68	1.8557	9 57 28.7	13.120
2	22 8 56.91	1.8520	9 44 20.6	13.149
3	22 10 47.92	1.8484	9 31 10.8	13.178
4	22 12 38.72	1.8449	9 17 59.3	13.206
5	22 14 29.31	1.8415	9 4 46.1	13.232
6	22 16 19.70	1.8381	8 51 31.4	13.257
7	22 18 9.88	1.8348	8 38 15.2	13.282
8	22 19 59.87	1.8315	8 24 57.5	13.307
9	22 21 49.66	1.8283	8 11 38.3	13.331
10	22 23 39.26	1.8252	7 58 17.8	13.353
11	22 25 28.68	1.8221	7 44 56.0	13.375
12	22 27 17.91	1.8191	7 31 32.8	13.397
13	22 29 6.97	1.8162	7 18 8.4	13.416
14	22 30 55.86	1.8133	7 4 42.9	13.434
15	22 32 44.57	1.8104	6 51 16.3	13.452
16	22 34 33.12	1.8078	6 37 48.6	13.470
17	22 36 21.51	1.8052	6 24 19.9	13.487
18	22 38 9.75	1.8027	6 10 50.2	13.503
19	22 39 57.84	1.8002	5 57 19.5	13.518
20	22 41 45.78	1.7977	5 43 48.0	13.532
21	22 43 33.57	1.7954	5 30 15.7	13.545
22	22 45 21.22	1.7932	5 16 42.6	13.558
23	22 47 8.75	1.7911	S. 5 3 8.7	13.571

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 48 56.15	1.7889	S. 4 49 34.1	13.582
1	22 50 43.42	1.7868	4 35 58.9	13.592
2	22 52 30.57	1.7848	4 22 23.1	13.602
3	22 54 17.60	1.7829	4 8 46.7	13.611
4	22 56 4.52	1.7811	3 55 9.8	13.619
5	22 57 51.33	1.7793	3 41 32.4	13.627
6	22 59 38.03	1.7775	3 27 54.6	13.633
7	23 1 24.63	1.7759	3 14 16.4	13.640
8	23 3 11.14	1.7744	3 0 37.8	13.645
9	23 4 57.56	1.7729	2 46 59.0	13.649
10	23 6 43.89	1.7715	2 33 20.0	13.653
11	23 8 30.14	1.7702	2 19 40.7	13.657
12	23 10 16.31	1.7689	2 6 1.2	13.659
13	23 12 2.40	1.7677	1 52 21.6	13.660
14	23 13 48.43	1.7666	1 38 42.0	13.661
15	23 15 34.39	1.7655	1 25 2.3	13.662
16	23 17 20.29	1.7646	1 11 22.6	13.661
17	23 19 6.14	1.7637	0 57 43.0	13.660
18	23 20 51.93	1.7629	0 44 3.4	13.658
19	23 22 37.68	1.7621	0 30 24.0	13.656
20	23 24 23.38	1.7613	0 16 44.7	13.653
21	23 26 9.04	1.7607	S. 0 3 5.6	13.649
22	23 27 54.67	1.7602	N. 0 10 33.2	13.644
23	23 29 40.27	1.7597	0 24 11.7	13.639
24	23 31 25.84	1.7593	N. 0 37 49.9	13.633

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 31 25.84	1.7593	N. 0 37 49.9	13.633
1	23 33 11.39	1.7590	0 51 27.7	13.627
2	23 34 56.92	1.7587	1 5 5.1	13.620
3	23 36 42.44	1.7586	1 18 42.1	13.612
4	23 38 27.95	1.7585	1 32 18.6	13.603
5	23 40 13.46	1.7585	1 45 54.5	13.594
6	23 41 58.97	1.7585	1 59 29.9	13.585
7	23 43 44.48	1.7586	2 13 4.7	13.574
8	23 45 30.00	1.7588	2 26 38.8	13.563
9	23 47 15.54	1.7591	2 40 12.3	13.552
10	23 49 1.09	1.7593	2 53 45.1	13.540
11	23 50 46.66	1.7597	3 7 17.1	13.526
12	23 52 32.26	1.7602	3 20 48.2	13.512
13	23 54 17.89	1.7608	3 34 18.5	13.497
14	23 56 3.56	1.7614	3 47 47.9	13.483
15	23 57 49.26	1.7621	4 1 16.5	13.468
16	23 59 35.01	1.7629	4 14 44.1	13.452
17	0 1 20.81	1.7638	4 28 10.7	13.434
18	0 3 6.66	1.7647	4 41 36.2	13.417
19	0 4 52.57	1.7657	4 55 0.7	13.398
20	0 6 38.54	1.7667	5 8 24.0	13.379
21	0 8 24.57	1.7678	5 21 46.2	13.360
22	0 10 10.68	1.7691	5 35 7.2	13.340
23	0 11 56.86	1.7703	N. 5 48 27.0	13.319

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 13 43.12	1.7717	N. 6 1 45.5	13.297
1	0 15 29.46	1.7731	6 15 2.7	13.275
2	0 17 15.89	1.7746	6 28 18.5	13.252
3	0 19 2.41	1.7762	6 41 33.0	13.229
4	0 20 49.03	1.7778	6 54 46.0	13.204
5	0 22 35.75	1.7795	7 7 57.5	13.179
6	0 24 22.57	1.7813	7 21 7.5	13.153
7	0 26 9.50	1.7832	7 34 15.9	13.128
8	0 27 56.55	1.7851	7 47 22.8	13.102
9	0 29 43.71	1.7870	8 0 28.1	13.074
10	0 31 30.99	1.7891	8 13 31.7	13.045
11	0 33 18.40	1.7912	8 26 33.5	13.016
12	0 35 5.94	1.7934	8 39 33.6	12.987
13	0 36 53.61	1.7958	8 52 31.9	12.957
14	0 38 41.43	1.7982	9 5 28.4	12.926
15	0 40 29.39	1.8006	9 18 23.0	12.893
16	0 42 17.50	1.8031	9 31 15.6	12.861
17	0 44 5.76	1.8056	9 44 6.3	12.828
18	0 45 54.17	1.8082	9 56 55.0	12.795
19	0 47 42.74	1.8109	10 9 41.7	12.760
20	0 49 31.48	1.8137	10 22 26.2	12.724
21	0 51 20.39	1.8166	10 35 8.6	12.688
22	0 53 9.47	1.8195	10 47 48.8	12.652
23	0 54 58.73	1.8226	11 0 26.8	12.615
24	0 56 48.18	1.8257	N. 11 13 2.6	12.577

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 56 48.18	1.8257	N.11 13 2.6	12.577
1	0 58 37.81	1.8288	11 25 36.0	12.538
2	1 0 27.63	1.8319	11 38 7.1	12.498
3	1 2 17.64	1.8352	11 50 35.8	12.458
4	1 4 7.85	1.8386	12 3 2.1	12.417
5	1 5 58.27	1.8420	12 15 25.8	12.374
6	1 7 48.89	1.8454	12 27 47.0	12.332
7	1 9 39.72	1.8490	12 40 5.6	12.288
8	1 11 30.77	1.8527	12 52 21.6	12.245
9	1 13 22.04	1.8563	13 4 35.0	12.201
10	1 15 13.53	1.8601	13 16 45.7	12.154
11	1 17 5.25	1.8639	13 28 53.5	12.107
12	1 18 57.20	1.8677	13 40 58.5	12.060
13	1 20 49.38	1.8717	13 53 0.7	12.012
14	1 22 41.81	1.8758	14 5 0.0	11.963
15	1 24 34.48	1.8799	14 16 56.3	11.913
16	1 26 27.40	1.8841	14 28 49.6	11.863
17	1 28 20.57	1.8883	14 40 39.8	11.811
18	1 30 13.99	1.8925	14 52 26.9	11.758
19	1 32 7.67	1.8969	15 4 10.8	11.706
20	1 34 1.62	1.9013	15 15 51.6	11.653
21	1 35 55.83	1.9058	15 27 29.1	11.597
22	1 37 50.31	1.9103	15 39 3.2	11.541
23	1 39 45.07	1.9149	N.15 50 34.0	11.485

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 41 40.10	1.9195	N.16 2 1.4	11.427
1	1 43 35.41	1.9243	16 13 25.3	11.369
2	1 45 31.01	1.9292	16 24 45.7	11.310
3	1 47 26.91	1.9341	16 36 2.5	11.250
4	1 49 23.10	1.9389	16 47 15.7	11.189
5	1 51 19.58	1.9438	16 58 25.2	11.127
6	1 53 16.36	1.9489	17 9 30.9	11.063
7	1 55 13.45	1.9540	17 20 32.8	11.000
8	1 57 10.84	1.9591	17 31 30.9	10.936
9	1 59 8.54	1.9643	17 42 25.1	10.870
10	2 1 6.56	1.9696	17 53 15.3	10.803
11	2 3 4.90	1.9749	18 4 1.5	10.735
12	2 5 3.55	1.9803	18 14 43.5	10.666
13	2 7 2.53	1.9858	18 25 21.4	10.597
14	2 9 1.84	1.9912	18 35 55.1	10.527
15	2 11 1.47	1.9966	18 46 24.6	10.456
16	2 13 1.43	2.0022	18 56 49.8	10.382
17	2 15 1.74	2.0080	19 7 10.5	10.308
18	2 17 2.39	2.0137	19 17 26.8	10.234
19	2 19 3.38	2.0193	19 27 38.6	10.158
20	2 21 4.71	2.0251	19 37 45.8	10.082
21	2 23 6.39	2.0309	19 47 48.4	10.004
22	2 25 8.42	2.0367	19 57 46.3	9.925
23	2 27 10.80	2.0427	20 7 39.4	9.845
24	2 29 13.54	2.0487	N.20 17 27.7	9.764

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 29 13.54	2.0487	N.20 17 27.7	9.764
1	2 31 16.64	2.0546	20 27 11.1	9.682
2	2 33 20.09	2.0606	20 36 49.6	9.600
3	2 35 23.91	2.0667	20 46 23.1	9.516
4	2 37 28.10	2.0728	20 55 51.5	9.430
5	2 39 32.65	2.0789	21 5 14.7	9.343
6	2 41 37.57	2.0851	21 14 32.7	9.256
7	2 43 42.86	2.0913	21 23 45.4	9.167
8	2 45 48.53	2.0976	21 32 52.8	9.078
9	2 47 54.57	2.1038	21 41 54.8	8.987
10	2 50 0.99	2.1102	21 50 51.3	8.895
11	2 52 7.79	2.1165	21 59 42.2	8.803
12	2 54 14.97	2.1228	22 8 27.6	8.709
13	2 56 22.53	2.1292	22 17 7.3	8.613
14	2 58 30.47	2.1356	22 25 41.2	8.516
15	3 0 38.80	2.1420	22 34 9.2	8.418
16	3 2 47.51	2.1484	22 42 31.3	8.319
17	3 4 56.61	2.1548	22 50 47.5	8.219
18	3 7 6.09	2.1612	22 58 57.6	8.117
19	3 9 15.96	2.1677	23 7 1.6	8.015
20	3 11 26.22	2.1743	23 14 59.4	7.912
21	3 13 36.88	2.1809	23 22 51.0	7.807
22	3 15 47.93	2.1873	23 30 36.2	7.700
23	3 17 59.36	2.1938	N.23 38 15.0	7.593

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 20 11.18	2.2003	N.23 45 47.4	7.485
1	3 22 23.39	2.2068	23 53 13.2	7.375
2	3 24 36.00	2.2134	24 0 32.4	7.264
3	3 26 49.00	2.2198	24 7 44.9	7.152
4	3 29 2.38	2.2263	24 14 50.7	7.039
5	3 31 16.16	2.2329	24 21 49.6	6.924
6	3 33 30.33	2.2394	24 28 41.6	6.808
7	3 35 44.89	2.2459	24 35 26.6	6.692
8	3 37 59.84	2.2523	24 42 4.6	6.573
9	3 40 15.17	2.2587	24 48 35.4	6.453
10	3 42 30.89	2.2652	24 54 59.0	6.332
11	3 44 46.99	2.2716	25 1 15.3	6.211
12	3 47 3.48	2.2780	25 7 24.3	6.088
13	3 49 20.35	2.2843	25 13 25.9	5.964
14	3 51 37.60	2.2907	25 19 20.0	5.837
15	3 53 55.23	2.2970	25 25 6.4	5.710
16	3 56 13.24	2.3032	25 30 45.2	5.583
17	3 58 31.62	2.3095	25 36 16.4	5.455
18	4 0 50.38	2.3157	25 41 39.8	5.324
19	4 3 9.51	2.3218	25 46 55.3	5.192
20	4 5 29.00	2.3279	25 52 2.9	5.060
21	4 7 48.86	2.3341	25 57 2.5	4.927
22	4 10 9.09	2.3401	26 1 54.1	4.792
23	4 12 29.67	2.3460	26 6 37.5	4.655
24	4 14 50.61	2.3520	N.26 11 12.7	4.517

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 14 50.61	2.3520	N.26 11 12.7	4.517
1	4 17 11.91	2.3578	26 15 39.6	4.379
2	4 19 33.55	2.3636	26 19 58.2	4.240
3	4 21 55.54	2.3693	26 24 8.4	4.099
4	4 24 17.87	2.3750	26 28 10.1	3.957
5	4 26 40.54	2.3806	26 32 3.2	3.813
6	4 29 3.54	2.3861	26 35 47.7	3.669
7	4 31 26.87	2.3916	26 39 23.5	3.524
8	4 33 50.53	2.3970	26 42 50.6	3.378
9	4 36 14.51	2.4023	26 46 8.9	3.231
10	4 38 38.81	2.4076	26 49 18.3	3.082
11	4 41 3.42	2.4127	26 52 18.8	2.932
12	4 43 28.34	2.4178	26 55 10.2	2.782
13	4 45 53.56	2.4228	26 57 52.6	2.631
14	4 48 19.08	2.4278	27 0 25.9	2.478
15	4 50 44.89	2.4326	27 2 50.0	2.325
16	4 53 10.99	2.4372	27 5 4.9	2.171
17	4 55 37.36	2.4418	27 7 10.5	2.015
18	4 58 4.01	2.4464	27 9 6.7	1.858
19	5 0 30.93	2.4508	27 10 53.5	1.702
20	5 2 58.11	2.4551	27 12 30.9	1.544
21	5 5 25.54	2.4593	27 13 58.8	1.385
22	5 7 53.23	2.4635	27 15 17.1	1.225
23	5 10 21.16	2.4675	N.27 16 25.8	1.064

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 12 49.33	2.4714	N.27 17 24.8	0.902
1	5 15 17.73	2.4752	27 18 14.1	0.740
2	5 17 46.36	2.4789	27 18 53.6	0.578
3	5 20 15.20	2.4824	27 19 23.4	0.414
4	5 22 44.25	2.4859	27 19 43.3	0.249
5	5 25 13.51	2.4892	27 19 53.3	+0.085
6	5 27 42.96	2.4924	27 19 53.5	−0.080
7	5 30 12.60	2.4955	27 19 43.7	0.247
8	5 32 42.42	2.4985	27 19 23.9	0.414
9	5 35 12.42	2.5013	27 18 54.0	0.582
10	5 37 42.58	2.5040	27 18 14.1	0.749
11	5 40 12.90	2.5067	27 17 24.1	0.918
12	5 42 43.38	2.5092	27 16 23.9	1.087
13	5 45 14.00	2.5115	27 15 13.6	1.257
14	5 47 44.76	2.5137	27 13 53.1	1.427
15	5 50 15.64	2.5157	27 12 22.4	1.597
16	5 52 46.64	2.5177	27 10 41.4	1.768
17	5 55 17.76	2.5195	27 8 50.2	1.938
18	5 57 48.98	2.5212	27 6 48.8	2.109
19	6 0 20.30	2.5228	27 4 37.1	2.282
20	6 2 51.71	2.5242	27 2 15.0	2.454
21	6 5 23.20	2.5254	26 59 42.6	2.626
22	6 7 54.76	2.5266	26 56 59.9	2.798
23	6 10 26.39	2.5277	26 54 6.8	2.971
24	6 12 58.08	2.5286	N.26 51 3.4	3.143

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 12 58.08	2.5286	N.26 51 3.4	3.143
1	6 15 29.82	2.5293	26 47 49.6	3.316
2	6 18 1.60	2.5299	26 44 25.5	3.488
3	6 20 33.41	2.5304	26 40 51.0	3.661
4	6 23 5.25	2.5308	26 37 6.2	3.834
5	6 25 37.11	2.5311	26 33 11.0	4.007
6	6 28 8.98	2.5312	26 29 5.4	4.179
7	6 30 40.85	2.5312	26 24 49.5	4.352
8	6 33 12.72	2.5310	26 20 23.2	4.524
9	6 35 44.57	2.5307	26 15 46.6	4.696
10	6 38 16.40	2.5303	26 10 59.7	4.868
11	6 40 48.21	2.5298	26 6 2.5	5.040
12	6 43 19.98	2.5291	26 0 54.9	5.212
13	6 45 51.70	2.5283	25 55 37.1	5.383
14	6 48 23.38	2.5275	25 50 9.0	5.553
15	6 50 55.00	2.5264	25 44 30.7	5.724
16	6 53 26.55	2.5252	25 38 42.1	5.894
17	6 55 58.03	2.5240	25 32 43.4	6.063
18	6 58 29.43	2.5227	25 26 34.5	6.232
19	7 1 0.75	2.5212	25 20 15.5	6.401
20	7 3 31.97	2.5195	25 13 46.4	6.569
21	7 6 3.09	2.5178	25 7 7.2	6.737
22	7 8 34.10	2.5160	25 0 18.0	6.903
23	7 11 5.01	2.5142	N.24 53 18.8	7.069

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 13 35.80	2.5121	N.24 46 9.7	7.234
1	7 16 6.46	2.5099	24 38 50.7	7.399
2	7 18 36.99	2.5077	24 31 21.8	7.564
3	7 21 7.38	2.5053	24 23 43.0	7.728
4	7 23 37.63	2.5028	24 15 54.4	7.891
5	7 26 7.72	2.5003	24 7 56.1	8.052
6	7 28 37.66	2.4977	23 59 48.2	8.213
7	7 31 7.44	2.4950	23 51 30.6	8.373
8	7 33 37.06	2.4922	23 43 3.4	8.531
9	7 36 6.51	2.4893	23 34 26.8	8.689
10	7 38 35.78	2.4863	23 25 40.7	9.847
11	7 41 4.87	2.4833	23 16 45.2	9.003
12	7 43 33.78	2.4802	23 7 40.3	9.159
13	7 46 2.50	2.4770	22 58 26.1	9.313
14	7 48 31.02	2.4737	22 49 2.8	9.465
15	7 50 59.34	2.4703	22 39 30.3	9.617
16	7 53 27.46	2.4669	22 29 48.7	9.768
17	7 55 55.37	2.4635	22 19 58.1	9.918
18	7 58 23.08	2.4600	22 9 58.6	10.066
19	8 0 50.57	2.4563	21 59 50.2	10.213
20	8 3 17.84	2.4527	21 49 33.0	10.359
21	8 5 44.89	2.4490	21 39 7.1	10.563
22	8 8 11.72	2.4452	21 28 32.6	10.647
23	8 10 38.32	2.4414	21 17 49.4	10.791
24	8 13 4.69	2.4375	N.21 6 57.7	10.932

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	8	13	4.69	2.4375	N.21	6	57.7	10.932
1	8	15	30.82	2.4336	20	55	57.6	11.071
2	8	17	56.72	2.4297	20	44	49.2	11.208
3	8	20	22.39	2.4258	20	33	32.6	11.345
4	8	22	47.82	2.4218	20	22	7.8	11.481
5	8	25	13.00	2.4177	20	10	34.9	11.615
6	8	27	37.94	2.4137	19	58	54.0	11.748
7	8	30	2.64	2.4096	19	47	5.2	11.879
8	8	32	27.09	2.4054	19	35	8.6	12.008
9	8	34	51.29	2.4012	19	23	4.3	12.136
10	8	37	15.24	2.3971	19	10	52.3	12.263
11	8	39	38.94	2.3929	18	58	32.8	12.388
12	8	42	2.39	2.3888	18	46	5.8	12.512
13	8	44	25.59	2.3846	18	33	31.4	12.633
14	8	46	48.54	2.3803	18	20	49.8	12.753
15	8	49	11.23	2.3761	18	8	1.0	12.672
16	8	51	33.67	2.3718	17	55	5.1	12.990
17	8	53	55.85	2.3676	17	42	2.2	13.105
18	8	56	17.78	2.3634	17	28	52.5	13.219
19	8	58	39.46	2.3592	17	15	36.0	13.332
20	9	1	0.88	2.3550	17	2	12.7	13.443
21	9	3	22.05	2.3507	16	48	42.9	13.551
22	9	5	42.97	2.3466	16	35	6.6	13.658
23	9	8	3.64	2.3423	N.16	21	23.9	13.764

TUESDAY 30.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	9	10	24.05	2.3381	N.16	7	34.9	13.868
1	9	12	44.21	2.3340	15	53	39.7	13.971
2	9	15	4.13	2.3299	15	39	38.4	14.071
3	9	17	23.80	2.3257	15	25	31.2	14.169
4	9	19	43.22	2.3216	15	11	18.1	14.267
5	9	22	2.39	2.3175	14	56	59.1	14.363
6	9	24	21.32	2.3135	14	42	34.5	14.457
7	9	26	40.01	2.3095	14	28	4.3	14.548
8	9	28	58.46	2.3055	14	13	28.7	14.638
9	9	31	16.67	2.3015	13	58	47.7	14.727
10	9	33	34.64	2.2976	13	44	1.5	14.813
11	9	35	52.38	2.2937	13	29	10.1	14.898
12	9	38	9.89	2.2899	13	14	13.7	14.982
13	9	40	27.17	2.2861	12	59	12.3	15.063
14	9	42	44.22	2.2823	12	44	6.1	15.142
15	9	45	1.05	2.2786	12	28	55.2	15.220
16	9	47	17.65	2.2748	12	13	39.7	15.296
17	9	49	34.03	2.2712	11	58	19.7	15.370
18	9	51	50.20	2.2677	11	42	55.3	15.442
19	9	54	6.15	2.2641	11	27	26.6	15.513
20	9	56	21.89	2.2606	11	11	53.7	15.582
21	9	58	37.42	2.2571	10	56	16.8	15.648
22	10	0	52.74	2.2538	10	40	35.9	15.713
23	10	3	7.87	2.2505	10	24	51.2	15.777
24	10	5	22.80	2.2472	N.10	9	2.7	15.838

WEDNESDAY 31.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	10	5	22.80	2.2472	N.10	9	2.7	15.838
1	10	7	37.53	2.2439	9	53	10.6	15.898
2	10	9	52.07	2.2408	9	37	14.9	15.957
3	10	12	6.42	2.2377	9	21	15.8	16.013
4	10	14	20.59	2.2347	9	5	13.4	16.067
5	10	16	34.58	2.2316	8	49	7.8	16.118
6	10	18	48.38	2.2286	8	32	59.2	16.168
7	10	21	2.01	2.2257	8	16	47.6	16.218
8	10	23	15.47	2.2230	8	0	33.1	16.266
9	10	25	28.77	2.2203	7	44	15.7	16.312
10	10	27	41.91	2.2177	7	27	55.7	16.354
11	10	29	54.89	2.2150	7	11	33.2	16.395
12	10	32	7.71	2.2124	6	55	8.3	16.435
13	10	34	20.38	2.2100	6	38	41.0	16.473
14	10	36	32.91	2.2076	6	22	11.5	16.509
15	10	38	45.29	2.2053	6	5	39.9	16.543
16	10	40	57.54	2.2031	5	49	6.3	16.577
17	10	43	9.66	2.2008	5	32	30.8	16.607
18	10	45	21.64	2.1987	5	15	53.5	16.636
19	10	47	33.50	2.1967	4	59	14.5	16.663
20	10	49	45.24	2.1948	4	42	33.9	16.688
21	10	51	56.87	2.1929	4	25	51.9	16.712
22	10	54	8.39	2.1910	4	9	8.5	16.734
23	10	56	19.79	2.1892	N. 3	52	23.8	16.754

THURSDAY, AUGUST 1.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	10	58	31.09	2.1876	N. 3	35	38.0	16.772

PHASES OF THE MOON.

		d	h	m
☽	First Quarter,. .	6	20	20.2
○	Full Moon,. . .	13	22	54.8
☾	Last Quarter, . .	22	0	16.0
●	New Moon, . .	29	9	40.5

		d	h
☾	Perigee,.	4	12.8
☾	Apogee,.	19	21.6
☾	Perigee,.	31	18.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	Sun	W.	25° 39′ 18″	2621	27° 17′ 44″	2613	28° 56′ 21″	2605	30° 35′ 9″	2598
	Spica	E.	76 7 47	2296	74 21 42	2291	72 35 29	2285	70 49 8	2281
3	Sun	W.	38 51 22	2571	40 30 57	2566	42 10 38	2564	43 50 23	2561
	Spica	E.	61 55 56	2264	60 9 3	2262	58 22 7	2260	56 35 8	2258
	Antares	E.	107 44 58	2257	105 57 56	2254	104 10 49	2252	102 23 39	2250
4	Sun	W.	52 9 56	2553	53 49 56	2552	55 29 57	2552	57 9 58	2552
	Mars	W.	27 26 12	2441	29 8 49	2440	30 51 27	2441	32 34 4	2441
	Spica	E.	47 39 47	2255	45 52 41	2256	44 5 36	2257	42 18 33	2258
	Antares	E.	93 27 15	2245	91 39 55	2245	89 52 34	2245	88 5 14	2246
5	Sun	W.	65 29 53	2557	67 9 47	2559	68 49 39	2561	70 29 28	2563
	Mars	W.	41 6 55	2447	42 49 23	2448	44 31 49	2451	46 14 11	2453
	Regulus	W.	20 52 29	2267	22 39 17	2267	24 26 5	2267	26 12 53	2268
	Spica	E.	33 23 54	2270	31 37 10	2274	29 50 32	2279	28 4 1	2283
	Antares	E.	79 8 52	2252	77 21 42	2254	75 34 34	2256	73 47 29	2258
6	Sun	W.	78 47 39	2578	80 27 4	2581	82 6 25	2581	83 45 41	2588
	Mars	W.	54 45 7	2468	56 27 5	2472	58 8 58	2475	59 50 46	2479
	Regulus	W.	35 6 21	2278	36 52 53	2281	38 39 20	2285	40 25 42	2287
	Antares	E.	64 53 3	2272	63 6 23	2275	61 19 47	2279	59 33 17	2283
7	Sun	W.	92 0 39	2610	93 39 21	2615	95 17 56	2620	96 56 24	2624
	Mars	W.	68 18 22	2500	69 59 35	2504	71 40 42	2510	73 21 42	2515
	Regulus	W.	49 16 17	2307	51 2 7	2311	52 47 51	2315	54 33 29	2320
	Antares	E.	50 42 11	2303	48 56 16	2307	47 10 27	2312	45 24 45	2317
	α Aquilæ	E.	103 30 40	2984	102 0 7	2980	100 29 29	2977	98 58 47	2974
	Jupiter	E.	107 9 42	2268	105 22 55	2272	103 36 15	2277	101 49 41	2281
8	Sun	W.	105 7 5	2651	106 44 51	2656	108 22 30	2662	110 0 1	2668
	Mars	W.	81 44 57	2540	83 25 14	2545	85 5 24	2551	86 45 26	2558
	Regulus	W.	63 19 55	2344	65 4 51	2349	66 49 39	2354	68 34 20	2359
	Antares	E.	36 37 59	2341	34 53 0	2346	33 8 8	2352	31 23 24	2357
	α Aquilæ	E.	91 25 12	2984	89 54 39	2989	88 24 12	2996	86 53 54	3003
	Jupiter	E.	92 58 35	2305	91 12 43	2311	89 26 59	2316	87 41 23	2321
9	Sun	W.	118 5 35	2698	119 42 17	2705	121 18 50	2712	122 55 14	2719
	Mars	W.	95 3 33	2587	96 42 46	2593	98 21 50	2600	100 0 45	2607
	Regulus	W.	77 15 44	2388	78 59 36	2394	80 43 19	2401	82 26 53	2406
	Spica	W.	23 19 16	2418	25 2 25	2419	26 45 32	2422	28 28 35	2426
	Jupiter	E.	78 55 19	2349	77 10 31	2355	75 25 52	2361	73 41 21	2367
	α Aquilæ	E.	79 25 12	3058	77 56 11	3073	76 27 28	3089	74 59 5	3106
10	Regulus	W.	91 2 31	2439	92 45 10	2446	94 27 39	2453	96 9 59	2460
	Spica	W.	37 2 18	2450	38 44 41	2456	40 26 56	2463	42 9 1	2470
	Jupiter	E.	65 1 2	2399	63 17 26	2406	61 34 0	2413	59 50 44	2420
	α Aquilæ	E.	67 43 4	3218	66 17 16	3246	64 52 1	3276	63 27 21	3307
	Fomalhaut	E.	90 59 12	2787	89 24 27	2795	87 49 52	2802	86 15 27	2811
11	Spica	W.	50 37 8	2504	52 18 16	2511	53 59 14	2519	55 40 1	2527
	Jupiter	E.	51 16 55	2457	49 34 41	2465	47 52 38	2472	46 10 46	2480
	α Aquilæ	E	56 34 15	3510	55 14 2	3560	53 54 44	3615	52 36 26	3674

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	Sun	W.	32° 14′ 7″	2591	33° 53′ 14″	2585	35° 32′ 30″	2580	37° 11′ 53″	2575
	Spica	E.	69 2 41	2277	67 16 8	2273	65 29 29	2270	63 42 45	2266
3	Sun	W.	45 30 12	2558	47 10 5	2556	48 50 0	2555	50 29 57	2553
	Spica	E.	54 48 6	2257	53 1 3	2256	51 13 58	2256	49 26 53	2255
	Antares	E.	100 36 26	2249	98 49 11	2247	97 1 53	2246	95 14 34	2246
4	Sun	W.	58 49 59	2552	60 30 0	2553	62 9 59	2554	63 49 57	2556
	Mars	W.	34 16 41	2441	35 59 17	2443	37 41 51	2443	39 24 24	2445
	Spica	E.	40 31 31	2260	38 44 32	2262	36 57 36	2264	35 10 43	2266
	Antares	E.	86 17 55	2247	84 30 37	2247	82 43 20	2249	80 56 5	2250
5	Sun	W.	72 9 14	2566	73 48 56	2568	75 28 35	2572	77 8 9	2574
	Mars	W.	47 56 30	2456	49 38 45	2458	51 20 57	2462	53 3 4	2465
	Regulus	W.	27 59 40	2269	29 46 25	2271	31 33 7	2273	33 19 46	2276
	Spica	E.	26 17 37	2289	24 31 21	2296	22 45 16	2304	20 59 23	2315
	Antares	E.	72 0 28	2261	70 13 31	2263	68 26 37	2266	66 39 48	2269
6	Sun	W.	85 24 52	2593	87 3 57	2596	88 42 57	2601	90 21 51	2605
	Mars	W.	61 32 29	2483	63 14 6	2487	64 55 37	2491	66 37 3	2496
	Regulus	W.	42 12 0	2291	43 58 13	2295	45 44 20	2299	47 30 21	2302
	Antares	E.	57 46 52	2287	56 0 33	2291	54 14 20	2294	52 28 12	2299
7	Sun	W.	98 34 46	2629	100 13 1	2634	101 51 10	2640	103 29 11	2645
	Mars	W.	75 2 35	2520	76 43 21	2525	78 24 0	2530	80 4 32	2535
	Regulus	W.	56 19 0	2324	58 4 25	2329	59 49 42	2334	61 34 52	2339
	Antares	E.	43 39 10	2321	41 53 41	2326	40 8 20	2331	38 23 6	2336
	α Aquilæ	E.	97 28 2	2973	95 57 16	2975	94 26 32	2977	92 55 50	2980
	Jupiter	E.	100 3 14	2285	98 16 53	2291	96 30 40	2296	94 44 34	2300
8	Sun	W.	111 37 24	2674	113 14 39	2680	114 51 46	2686	116 28 45	2692
	Mars	W.	88 25 19	2564	90 5 4	2569	91 44 42	2574	93 24 12	2561
	Regulus	W.	70 18 53	2365	72 3 18	2371	73 47 35	2376	75 31 44	2382
	Antares	E.	29 38 48	2363	27 54 20	2369	26 10 0	2374	24 25 48	2380
	α Aquilæ	E.	85 23 45	3012	83 53 47	3022	82 24 1	3033	80 54 29	3045
	Jupiter	E.	85 55 54	2326	84 10 33	2332	82 25 20	2337	80 40 15	2344
9	Sun	W.	124 31 29	2725	126 7 35	2733	127 43 31	2740	129 19 18	2747
	Mars	W.	101 39 31	2613	103 18 8	2620	104 56 36	2627	106 34 54	2634
	Regulus	W.	84 10 19	2412	85 53 36	2419	87 36 44	2426	89 19 42	2432
	Spica	W.	30 11 32	2430	31 54 24	2435	33 37 9	2440	35 19 47	2445
	Jupiter	E.	71 56 59	2373	70 12 46	2380	68 28 42	2386	66 44 47	2393
	α Aquilæ	E.	73 31 3	3125	72 3 24	3146	70 36 10	3168	69 9 23	3192
10	Regulus	W.	97 52 9	2467	99 34 9	2475	101 15 58	2482	102 57 36	2489
	Spica	W.	43 50 57	2476	45 32 44	2482	47 14 22	2489	48 55 50	2497
	Jupiter	E.	58 7 38	2427	56 24 42	2434	54 41 56	2441	52 59 20	2449
	α Aquilæ	E.	62 3 18	3342	60 39 55	3379	59 17 15	3420	57 55 21	3463
	Fomalhaut	E.	84 41 13	2820	83 7 11	2830	81 33 22	2840	79 59 46	2852
11	Spica	W.	57 20 37	2535	59 1 2	2543	60 41 16	2551	62 21 18	2559
	Jupiter	E.	44 29 5	2489	42 47 36	2497	41 6 18	2505	39 25 12	2513
	α Aquilæ	E.	51 19 11	3739	50 3 5	3809	48 48 12	3885	47 34 37	3967

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Fomalhaut	E.	78° 26′ 25″	2864	76° 53′ 20″	2877	75° 20′ 31″	2891	73° 48′ 0″	2905
	α Pegasi	E.	99 59 24	2674	98 22 9	2681	96 45 3	2687	95 8 6	2694
12	Spica	W.	64 1 9	2568	65 40 48	2577	67 20 15	2585	68 59 30	2595
	Antares	W.	18 7 55	2561	19 47 43	2571	21 27 18	2580	23 6 41	2588
	Jupiter	E.	37 44 17	2522	36 3 35	2531	34 23 5	2540	32 42 47	2549
	Fomalhaut	E.	66 10 29	2993	64 40 8	3014	63 10 13	3036	61 40 45	3060
	α Pegasi	E.	87 5 54	2736	85 30 2	2746	83 54 23	2756	82 18 58	2767
	Saturn	E.	96 29 35	2589	94 50 25	2598	93 11 27	2607	91 32 41	2615
13	Spica	W.	77 12 37	2641	78 50 36	2651	80 28 22	2661	82 5 54	2671
	Antares	W.	31 20 27	2636	32 58 33	2646	34 36 26	2655	36 14 6	2666
	Fomalhaut	E.	54 21 20	3204	52 55 15	3239	51 29 52	3276	50 5 12	3316
	α Pegasi	E.	74 25 28	2825	72 51 33	2838	71 17 55	2852	69 44 34	2866
	Saturn	E.	83 21 59	2663	81 44 30	2673	80 7 14	2684	78 30 12	2693
14	Spica	W.	90 10 14	2722	91 46 25	2732	93 22 22	2742	94 58 6	2753
	Antares	W.	44 19 2	2716	45 55 20	2726	47 31 25	2737	49 7 16	2748
	Fomalhaut	E.	43 14 45	3573	41 55 41	3639	40 37 49	3711	39 21 14	3790
	α Pegasi	E.	62 2 37	2945	60 31 15	2962	59 0 15	2981	57 29 39	3001
	Saturn	E.	70 28 27	2747	68 52 49	2757	67 17 25	2769	65 42 16	2779
	α Arietis	E.	103 41 47	2732	102 5 50	2742	100 30 6	2753	98 54 36	2763
15	Antares	W.	57 3 2	2800	58 37 30	2810	60 11 45	2821	61 45 46	2831
	α Pegasi	E.	50 2 59	3111	48 35 3	3137	47 7 38	3164	45 40 46	3193
	Saturn	E.	57 50 11	2837	56 16 31	2849	54 43 7	2861	53 9 58	2873
	α Arietis	E.	91 0 27	2815	89 26 18	2825	87 52 23	2835	86 18 41	2846
16	Antares	W.	69 32 34	2881	71 5 17	2891	72 37 48	2901	74 10 6	2910
	Saturn	E.	45 28 4	2935	43 56 29	2947	42 25 10	2960	40 54 7	2973
	α Arietis	E.	78 33 32	2897	77 1 9	2906	75 28 58	2916	73 57 0	2927
17	Antares	W.	81 48 40	2955	83 19 49	2963	84 50 48	2972	86 21 36	2980
	α Aquilæ	W.	39 37 41	5037	40 34 7	4916	41 32 9	4808	42 31 39	4711
	Jupiter	W.	26 33 51	2910	28 5 57	2919	29 37 52	2927	31 9 37	2935
	Saturn	E.	33 23 14	3047	31 53 59	3064	30 25 5	3082	28 56 33	3100
	α Arietis	E.	66 20 14	2973	64 49 28	2981	63 18 52	2990	61 48 27	2999
	Aldebaran	E.	98 27 27	3026	96 57 46	3034	95 28 16	3042	93 58 55	3050
	Venus	E.	109 55 42	3423	108 33 51	3432	107 12 11	3440	105 50 40	3448
18	Antares	W.	93 53 15	3015	95 23 9	3021	96 52 56	3027	98 22 35	3033
	α Aquilæ	W.	47 47 21	4346	48 53 31	4293	50 0 30	4244	51 8 15	4199
	Jupiter	W.	38 46 0	2969	40 16 51	2976	41 47 34	2981	43 18 10	2986
	α Arietis	E.	54 18 57	3038	52 49 31	3046	51 20 15	3052	49 51 7	3059
	Aldebaran	E.	86 34 29	3085	85 6 1	3092	83 37 42	3098	82 9 30	3105
	Venus	E.	99 5 16	3486	97 44 36	3492	96 24 3	3499	95 3 38	3505
	Sun	E.	133 50 10	3378	132 27 28	3385	131 4 54	3391	129 42 27	3397
19	α Aquilæ	W.	56 56 36	4023	58 7 53	3995	59 19 38	3969	60 31 48	3946
	Jupiter	W.	50 49 37	3009	52 19 39	3012	53 49 37	3016	55 19 30	3018
	α Arietis	E.	42 27 25	3089	40 59 2	3095	39 30 46	3100	38 2 36	3105
	Aldebaran	E.	74 50 18	3131	73 22 46	3136	71 55 20	3140	70 27 59	3144
	Venus	E.	88 23 1	3529	87 3 9	3532	85 43 20	3535	84 23 35	3539

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
11	Fomalhaut	E.	72° 15′ 48″	2921	70° 43′ 56″	2937	69° 12′ 24″	2955	67° 41′ 15″	2974
	α Pegasi	E.	93 31 18	2701	91 54 40	2710	90 18 13	2719	88 41 58	2727
12	Spica	W.	70 38 32	2604	72 17 22	2612	73 56 0	2622	75 34 25	2632
	Antares	W.	24 45 52	2598	26 24 50	2607	28 3 35	2617	29 42 7	2626
	Jupiter	E.	31 2 42	2558	29 22 49	2567	27 43 9	2576	26 3 41	2586
	Fomalhaut	E.	60 11 47	3085	58 43 19	3112	57 15 24	3141	55 48 4	3171
	α Pegasi	E.	80 43 47	2778	79 8 50	2788	77 34 7	2800	75 59 39	2813
	Saturn	E.	89 54 7	2625	88 15 46	2634	86 37 37	2643	84 59 41	2654
13	Spica	W.	83 43 13	2681	85 20 19	2691	86 57 11	2701	88 33 49	2711
	Antares	W.	37 51 32	2675	39 28 45	2686	41 5 44	2696	42 42 30	2706
	Fomalhaut	E.	48 41 19	3359	47 18 16	3407	45 56 7	3457	44 34 55	3513
	α Pegasi	E.	68 11 32	2880	66 38 48	2896	65 6 24	2912	63 34 20	2928
	Saturn	E.	76 53 23	2704	75 16 48	2714	73 40 27	2725	72 4 20	2735
14	Spica	W.	96 33 36	2763	98 8 52	2773	99 43 55	2784	101 18 44	2795
	Antares	W.	50 42 52	2758	52 18 15	2769	53 53 24	2779	55 28 20	2789
	Fomalhaut	E.	38 6 1	3878	36 52 19	3976	35 40 16	4085	34 30 0	4206
	α Pegasi	E.	55 59 27	3021	54 29 40	3042	53 0 19	3064	51 31 25	3087
	Saturn	E.	64 7 21	2791	62 32 41	2802	60 58 16	2814	59 24 6	2825
	α Arietis	E.	97 19 19	2773	95 44 16	2783	94 9 26	2794	92 34 50	2804
15	Antares	W.	63 19 34	2841	64 53 9	2852	66 26 30	2862	67 59 38	2871
	α Pegasi	E.	44 14 29	3225	42 48 49	3259	41 23 49	3294	39 59 31	3332
	Saturn	E.	51 37 4	2885	50 4 26	2897	48 32 3	2909	46 59 56	2921
	α Arietis	E.	84 45 13	2856	83 11 58	2866	81 38 56	2877	80 6 8	2887
16	Antares	W.	75 42 12	2920	77 14 6	2928	78 45 49	2938	80 17 20	2946
	Saturn	E.	39 23 21	2987	37 52 52	3001	36 22 41	3016	34 52 48	3031
	α Arietis	E.	72 25 15	2936	70 53 42	2946	69 22 21	2955	67 51 12	2964
17	Antares	W.	87 52 14	2987	89 22 43	2995	90 53 2	3002	92 23 13	3009
	α Aquilæ	W.	43 32 29	4623	44 34 34	4543	45 37 48	4472	46 42 5	4406
	Jupiter	W.	32 41 12	2942	34 12 38	2950	35 43 54	2957	37 15 1	2963
	Saturn	E.	27 28 23	3120	26 0 38	3143	24 33 21	3170	23 6 36	3199
	α Arietis	E.	60 18 13	3008	58 48 10	3015	57 18 16	3023	55 48 32	3030
	Aldebaran	E.	92 29 44	3057	91 0 42	3065	89 31 49	3072	88 3 5	3078
	Venus	E.	104 29 18	3456	103 8 5	3463	101 47 0	3471	100 26 4	3479
18	Antares	W.	90 52 7	3038	101 21 33	3043	102 50 52	3048	104 20 6	3052
	α Aquilæ	W.	52 16 42	4158	53 25 48	4119	54 35 31	4084	55 45 48	4052
	Jupiter	W.	44 48 40	2992	46 19 3	2997	47 49 20	3001	49 19 31	3005
	α Arietis	E.	48 22 7	3065	46 53 15	3072	45 24 31	3078	43 55 54	3084
	Aldebaran	E.	80 41 26	3110	79 13 29	3116	77 45 39	3121	76 17 55	3127
	Venus	E.	93 43 19	3510	92 23 6	3515	91 2 59	3521	89 42 58	3525
	Sun	E.	128 20 7	3402	126 57 53	3408	125 35 45	3412	124 13 42	3416
19	α Aquilæ	W.	61 44 21	3924	62 57 17	3904	64 10 33	3884	65 24 9	3865
	Jupiter	W.	56 49 20	3030	58 19 8	3022	59 48 54	3023	61 18 38	3024
	α Arietis	E.	36 34 32	3110	35 6 34	3115	33 38 43	3120	32 10 58	3126
	Aldebaran	E.	69 0 43	3148	67 33 31	3152	66 6 24	3155	64 39 21	3158
	Venus	E.	83 3 54	3541	81 44 15	3543	80 24 38	3545	79 5 3	3545

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	Sun	E.	122° 51′ 44″	3421	121° 29′ 51″	3424	120° 8′ 2″	3428	118° 46′ 17″	3430
20	α Aquilæ	W.	66 38 4	3849	67 52 16	3833	69 6 44	3817	70 21 29	3802
	Jupiter	W.	62 48 21	3025	64 18 3	3024	65 47 46	3024	67 17 29	3023
	Fomalhaut	W.	41 21 13	3953	42 33 39	3905	43 46 54	3860	45 0 54	3820
	α Arietis	E.	30 43 20	3131	29 15 48	3137	27 48 23	3143	26 21 6	3150
	Aldebaran	E.	63 12 21	3161	61 45 25	3163	60 18 31	3165	58 51 40	3168
	Venus	E.	77 45 29	3546	76 25 56	3545	75 6 22	3545	73 46 48	3545
	Sun	E.	111 58 4	3437	110 36 29	3437	109 14 54	3437	107 53 19	3435
21	α Aquilæ	W.	76 38 47	3739	77 54 53	3728	79 11 11	3717	80 27 40	3706
	Jupiter	W.	74 46 33	3011	76 16 32	3008	77 46 35	3004	79 16 43	2999
	Fomalhaut	W.	51 20 28	3656	52 38 2	3628	53 56 6	3603	55 14 37	3578
	α Pegasi	W.	28 56 41	3881	30 10 20	3807	31 25 15	3742	32 41 18	3683
	Aldebaran	E.	51 38 1	3176	50 11 23	3177	48 44 46	3178	47 18 11	3181
	Venus	E.	67 8 33	3533	65 48 45	3529	64 28 53	3525	63 8 56	3519
	Sun	E.	101 4 52	3423	99 43 1	3418	98 21 5	3414	96 59 4	3409
22	α Aquilæ	W.	86 52 48	3659	88 10 19	3650	89 27 59	3642	90 45 48	3634
	Jupiter	W.	86 49 2	2969	88 19 54	2962	89 50 55	2954	91 22 6	2946
	Fomalhaut	W.	61 53 29	3472	63 14 25	3452	64 35 43	3433	65 57 22	3415
	α Pegasi	W.	39 15 22	3463	40 36 28	3429	41 58 12	3398	43 20 31	3368
	Saturn	W.	27 30 33	3133	28 58 3	3114	30 25 55	3097	31 54 8	3080
	Aldebaran	E.	40 5 55	3193	38 39 38	3198	37 13 27	3204	35 47 23	3211
	Venus	E.	56 27 40	3488	55 7 3	3480	53 46 17	3472	52 25 22	3464
	Sun	E.	90 7 22	3376	88 44 38	3367	87 21 44	3358	85 58 40	3350
23	Fomalhaut	W.	72 50 41	3328	74 14 20	3311	75 38 19	3294	77 2 37	3277
	α Pegasi	W.	50 20 12	3238	51 45 36	3214	53 11 28	3192	54 37 47	3170
	Saturn	W.	39 20 10	3003	40 50 19	2988	42 20 47	2973	43 51 34	2958
	Venus	E.	45 38 14	3415	44 16 14	3404	42 54 2	3393	41 31 38	3382
	Sun	E.	79 0 33	3297	77 36 18	3285	76 11 49	3272	74 47 5	3260
24	Fomalhaut	W.	84 8 54	3198	85 35 5	3183	87 1 35	3168	88 28 23	3153
	α Pegasi	W.	61 55 46	3066	63 24 37	3047	64 53 52	3027	66 23 31	3007
	Saturn	W.	51 30 13	2882	53 2 55	2866	54 35 58	2850	56 9 21	2834
	α Arietis	W.	18 20 9	2989	19 50 36	2953	21 21 48	2923	22 53 38	2895
	Venus	E.	34 36 17	3322	33 12 31	3311	31 48 32	3299	30 24 19	3267
	Sun	E.	67 39 32	3189	66 13 10	3175	64 46 31	3159	63 19 33	3143
25	α Pegasi	W.	73 57 51	2912	75 29 55	2893	77 2 23	2875	78 35 14	2856
	Saturn	W.	64 1 32	2752	65 37 3	2735	67 12 57	2718	68 49 13	2701
	α Arietis	W.	30 40 54	2779	32 15 49	2760	33 51 10	2739	35 26 58	2719
	Sun	E.	55 59 51	3061	54 30 54	3043	53 1 35	3026	51 31 55	3009
26	Saturn	W.	76 56 16	2615	78 34 50	2598	80 13 48	2581	81 53 9	2564
	α Arietis	W.	43 32 27	2624	45 10 49	2606	46 49 36	2587	48 28 49	2569
	Sun	E.	43 58 2	2919	42 26 7	2901	40 53 50	2883	39 21 10	2865
27	α Arietis	W.	56 51 2	2481	58 32 42	2465	60 14 45	2448	61 57 12	2431
	Sun	E.	31 32 0	2776	29 57 1	2760	28 21 40	2742	26 45 56	2725
31	Sun	W.	21 44 15	2418	23 27 24	2416	25 10 36	2414	26 53 51	2413

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Sun	E.	117° 24′ 34″	3432	116° 2′ 54″	3434	114° 41′ 16″	3436	113° 19′ 40″	3436
20	α Aquilæ	W.	71 36 29	3789	72 51 43	3775	74 7 11	3762	75 22 53	3750
	Jupiter	W.	68 47 13	3022	70 16 59	3020	71 46 47	3018	73 16 38	3014
	Fomalhaut	W.	46 15 35	3782	47 30 56	3747	48 46 53	3715	50 3 24	3684
	α Arietis	E.	24 53 57	3158	23 26 58	3168	22 0 10	3180	20 33 37	3194
	Aldebaran	E.	57 24 52	3170	55 58 7	3171	54 31 23	3173	53 4 41	3174
	Venus	E.	72 27 13	3543	71 7 36	3542	69 47 58	3539	68 28 17	3536
	Sun	E.	106 31 42	3434	105 10 4	3431	103 48 23	3429	102 26 39	3426
21	α Aquilæ	W.	81 44 21	3696	83 1 12	3686	84 18 14	3677	85 35 26	3667
	Jupiter	W.	80 46 57	2994	82 17 17	2989	83 47 44	2982	85 18 19	2976
	Fomalhaut	W.	56 33 35	3555	57 52 58	3534	59 12 45	3512	60 32 56	3492
	α Pegasi	W.	33 58 23	3631	35 16 24	3583	36 35 17	3540	37 54 57	3499
	Aldebaran	E.	45 51 39	3183	44 25 9	3184	42 58 41	3187	41 32 16	3190
	Venus	E.	61 48 53	3514	60 28 44	3509	59 8 30	3503	57 48 9	3496
	Sun	E.	95 36 58	3403	94 14 45	3397	92 52 25	3391	91 29 58	3383
22	α Aquilæ	W.	92 3 46	3626	93 21 52	3620	94 40 5	3612	95 58 26	3606
	Jupiter	W.	92 53 27	2936	94 25 0	2927	95 56 44	2918	97 28 40	2908
	Fomalhaut	W.	67 19 21	3397	68 41 41	3379	70 4 21	3362	71 27 21	3345
	α Pegasi	W.	44 43 24	3339	46 6 50	3312	47 30 48	3286	48 55 16	3262
	Saturn	W.	33 22 42	3065	34 51 35	3048	36 20 48	3033	37 50 20	3018
	Aldebaran	E.	34 21 27	3220	32 55 41	3231	31 30 8	3244	30 4 51	3261
	Venus	E.	51 4 18	3454	49 43 3	3446	48 21 38	3436	47 0 2	3425
	Sun	E.	84 35 26	3340	83 12 1	3330	81 48 24	3319	80 24 35	3308
23	Fomalhaut	W.	78 27 15	3261	79 52 12	3246	81 17 27	3230	82 43 1	3214
	α Pegasi	W.	56 4 32	3148	57 31 43	3128	58 59 19	3107	60 27 20	3087
	Saturn	W.	45 22 39	2943	46 54 3	2927	48 25 47	2912	49 57 50	2897
	Venus	E.	40 9 1	3371	38 46 11	3358	37 23 7	3346	35 59 49	3334
	Sun	E.	73 22 7	3247	71 56 53	3233	70 31 23	3219	69 5 36	3204
24	Fomalhaut	W.	89 55 28	3138	91 22 52	3124	92 50 33	3110	94 18 31	3095
	α Pegasi	W.	67 53 35	2988	69 24 3	2969	70 54 55	2950	72 26 11	2931
	Saturn	W.	57 43 5	2818	59 17 9	2801	60 51 35	2785	62 26 23	2769
	α Arietis	W.	24 26 3	2869	25 59 1	2846	27 32 29	2823	29 6 27	2801
	Venus	E.	28 59 52	3276	27 35 13	3265	26 10 21	3256	24 45 18	3248
	Sun	E.	61 52 16	3128	60 24 40	3111	58 56 44	3095	57 28 28	3078
25	α Pegasi	W.	80 8 29	2838	81 42 7	2820	83 16 9	2802	84 50 34	2785
	Saturn	W.	70 25 52	2684	72 2 54	2667	73 40 18	2650	75 18 5	2632
	α Arietis	W.	37 3 12	2700	38 39 52	2681	40 16 58	2661	41 54 30	2643
	Sun	E.	50 1 53	2991	48 31 29	2973	47 0 43	2955	45 29 34	2937
26	Saturn	W.	83 32 53	2547	85 13 1	2530	86 53 32	2514	88 34 26	2497
	α Arietis	W.	50 8 26	2551	51 48 28	2533	53 28 55	2516	55 9 46	2498
	Sun	E.	37 48 6	2847	36 14 39	2829	34 40 49	2812	33 6 36	2794
27	α Arietis	W.	63 40 2	2415	65 23 15	2399	67 6 51	2384	68 50 49	2369
	Sun	E.	25 9 49	2708	23 33 20	2692	21 56 30	2676	20 19 18	2661
31	Sun	W.	28 37 7	2412	30 20 24	2412	32 3 41	2413	33 46 57	2415

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	8 45 57.19	9.712	N.18 0 22.9	-37.87	15 48.04	66.63	6 5.57	0.145
Frid.	2	8 49 49.94	9.686	17 45 5.2	38.60	15 48.17	66.55	6 1.77	0.171
Sat.	3	8 53 42.07	9.660	17 29 30.0	39.32	15 48.31	66.46	5 57.35	0.196
Sun.	4	8 57 33.57	9.634	17 13 37.9	40.02	15 48.45	66.38	5 52.31	0.222
Mon.	5	9 1 24.45	9.608	16 57 29.2	40.71	15 48.60	66.29	5 46.66	0.247
Tues.	6	9 5 14.73	9.583	16 41 4.2	41.38	15 48.75	66.21	5 40.40	0.273
Wed.	7	9 9 4.40	9.557	16 24 23.1	42.05	15 48.90	66.12	5 33.53	0.298
Thur.	8	9 12 53.47	9.532	16 7 26.3	42.70	15 49.06	66.04	5 26.06	0.323
Frid.	9	9 16 41.94	9.507	15 50 14.0	43.34	15 49.22	65.95	5 17.99	0.348
Sat.	10	9 20 29.82	9.483	15 32 46.5	43.96	15 49.39	65.87	5 9.34	0.372
Sun.	11	9 24 17.11	9.459	15 15 4.2	44.57	15 49.55	65.79	5 0.10	0.396
Mon.	12	9 28 3.82	9.435	14 57 7.4	45.17	15 49.72	65.71	4 50.29	0.420
Tues.	13	9 31 49.97	9.412	14 38 56.2	45.76	15 49.89	65.63	4 39.92	0.443
Wed.	14	9 35 35.57	9.389	14 20 30.9	46.34	15 50.07	65.55	4 28.99	0.466
Thur.	15	9 39 20.64	9.367	14 1 51.8	46.91	15 50.24	65.48	4 17.53	0.488
Frid.	16	9 43 5.19	9.346	13 42 59.4	47.46	15 50.42	65.40	4 5.56	0.509
Sat.	17	9 46 49.23	9.325	13 23 53.8	48.00	15 50.60	65.32	3 53.08	0.530
Sun.	18	9 50 32.77	9.305	13 4 35.3	48.52	15 50.78	65.25	3 40.10	0.550
Mon.	19	9 54 15.83	9.285	12 45 4.4	49.04	15 50.96	65.17	3 26.64	0.570
Tues.	20	9 57 58.42	9.266	12 25 21.3	49.55	15 51.15	65.10	3 12.71	0.589
Wed.	21	10 1 40.56	9.247	12 5 26.1	50.04	15 51.34	65.03	2 58.33	0.608
Thur.	22	10 5 22.25	9.228	11 45 19.3	50.52	15 51.54	64.96	2 43.50	0.626
Frid.	23	10 9 3.50	9.209	11 25 1.2	50.98	15 51.74	64.89	2 28.24	0.644
Sat.	24	10 12 44.33	9.192	11 4 32.1	51.43	15 51.94	64.83	2 12.56	0.661
Sun.	25	10 16 24.75	9.175	10 43 52.4	51.87	15 52.15	64.77	1 56.47	0.678
Mon.	26	10 20 4.77	9.158	10 23 2.4	52.29	15 52.36	64.71	1 40.00	0.695
Tues.	27	10 23 44.41	9.142	10 2 2.5	52.70	15 52.57	64.65	1 23.12	0.711
Wed.	28	10 27 23.68	9.127	9 40 53.0	53.09	15 52.79	64.60	1 5.87	0.726
Thur.	29	10 31 2.59	9.113	9 19 34.3	53.47	15 53.01	64.55	0 48.28	0.741
Frid.	30	10 34 41.15	9.099	8 58 6.6	53.83	15 53.24	64.50	0 30.35	0.755
Sat.	31	10 38 19.37	9.085	8 36 30.4	54.18	15 53.47	64.45	0 12.06	0.769
Sun.	32	10 41 57.26	9.072	N. 8 14 45.9	-54.51	15 53.70	64.41	0 6.56	0.782

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^s.18$ from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from* / *added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	8 45 56.21	9.712	N.18 0 26.7	-37.87	6 5.59	0.145	8 39 50.62
Frid.	2	8 49 48.97	9.686	17 45 9.0	38.60	6 1.79	0.171	8 43 47.18
Sat.	3	8 53 41.11	9.660	17 29 33.9	39.32	5 57.37	0.196	8 47 43.74
Sun.	4	8 57 32.63	9.634	17 13 41.8	40.02	5 52.33	0.222	8 51 40.29
Mon.	5	9 1 23.53	9.608	16 57 33.1	40.71	5 46.68	0.247	8 55 36.85
Tues.	6	9 5 13.83	9.583	16 41 8.1	41.38	5 40.43	0.273	8 59 33.40
Wed.	7	9 9 3.52	9.558	16 24 27.0	42.05	5 33.56	0.298	9 3 29.96
Thur.	8	9 12 52.61	9.533	16 7 30.1	42.70	5 26.09	0.323	9 7 26.52
Frid.	9	9 16 41.10	9.508	15 50 17.8	43.34	5 18.02	0.348	9 11 23.08
Sat.	10	9 20 29.00	9.484	15 32 50.3	43.96	5 9.37	0.372	9 15 19.63
Sun.	11	9 24 16.32	9.460	15 15 7.9	44.57	5 0.13	0.396	9 19 16.19
Mon.	12	9 28 3.06	9.436	14 57 11.0	45.17	4 50.32	0.420	9 23 12.74
Tues.	13	9 31 49.24	9.413	14 38 59.7	45.76	4 39.95	0.443	9 27 9.30
Wed.	14	9 35 34.87	9.390	14 20 34.3	46.34	4 29.02	0.466	9 31 5.85
Thur.	15	9 39 19.97	9.368	14 1 55.2	46.91	4 17.56	0.488	9 35 2.41
Frid.	16	9 43 4.55	9.347	13 43 2.7	47.46	4 5.59	0.509	9 38 58.96
Sat.	17	9 46 48.62	9.326	13 23 56.9	48.00	3 53.11	0.530	9 42 55.52
Sun.	18	9 50 32.20	9.306	13 4 38.3	48.53	3 40.13	0.550	9 46 52.07
Mon.	19	9 54 15.30	9.286	12 45 7.3	49.05	3 26.67	0.570	9 50 48.63
Tues.	20	9 57 57.93	9.267	12 25 23.9	49.56	3 12.75	0.589	9 54 45.18
Wed.	21	10 1 40.10	9.248	12 5 28.6	50.05	2 58.36	0.608	9 58 41.74
Thur.	22	10 5 21.83	9.229	11 45 21.6	50.53	2 43.53	0.626	10 2 38.29
Frid.	23	10 9 3.12	9.211	11 25 3.3	50.99	2 28.27	0.644	10 6 34.85
Sat.	24	10 12 43.99	9.194	11 4 34.0	51.44	2 12.59	0.661	10 10 31.40
Sun.	25	10 16 24.45	9.177	10 43 54.1	51.88	1 56.49	0.678	10 14 27.96
Mon.	26	10 20 4.51	9.160	10 23 3.9	52.30	1 40.00	0.695	10 18 24.51
Tues.	27	10 23 44.19	9.144	10 2 3.8	52.71	1 23.13	0.711	10 22 21.07
Wed.	28	10 27 23.51	9.129	9 40 54.0	53.10	1 5.89	0.726	10 26 17.62
Thur.	29	10 31 2.47	9.115	9 19 35.0	53.48	0 48.29	0.741	10 30 14.18
Frid.	30	10 34 41.08	9.101	8 58 7.1	53.84	0 30.35	0.755	10 34 10.73
Sat.	31	10 38 19.34	9.087	8 36 30.6	54.19	0 12.06	0.769	10 38 7.28
Sun.	32	10 41 57.27	9.074	N. 8 14 45.9	-54.52	0 6.56	0.782	10 42 3.83

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing.

Diff. for 1 hour.
+9ˢ.8565
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	213	129 3 11.3	2 28.3	143.62	−0.10	0.0063500	−24.9	15 17 38.63
2	214	129 60 38.6	59 55.5	143.65	0.20	.0062891	25.9	15 13 42.72
3	215	130 58 6.7	57 23.5	143.68	0.29	.0062259	26.8	15 9 46.81
4	216	131 55 35.4	54 52.0	143.71	0.35	.0061607	27.6	15 5 50.90
5	217	132 53 4.8	52 21.2	143.74	0.37	.0060935	28.4	15 1 54.99
6	218	133 50 35.0	49 51.2	143.77	0.37	.0060245	29.1	14 57 59.08
7	219	134 48 6.0	47 22.1	143.81	0.33	.0059538	29.7	14 54 3.17
8	220	135 45 37.9	44 53.9	143.85	0.27	.0058818	30.4	14 50 7.26
9	221	136 43 10.6	42 26.4	143.88	0.18	.0058078	30.9	14 46 11.35
10	222	137 40 44.3	39 59.9	143.92	−0.07	.0057329	31.4	14 42 15.44
11	223	138 38 19.0	37 34.5	143.97	+0.06	.0056568	31.9	14 38 19.53
12	224	139 35 54.8	35 10.2	144.02	0.19	.0055797	32.3	14 34 23.62
13	225	140 33 31.8	32 47.1	144.07	0.33	.0055016	32.7	14 30 27.71
14	226	141 31 10.0	30 25.1	144.12	0.46	.0054224	33.2	14 26 31.80
15	227	142 28 49.6	28 4.5	144.18	0.57	.0053422	33.6	14 22 35.89
16	228	143 26 30.5	25 45.3	144.24	0.66	.0052610	34.0	14 18 39.98
17	229	144 24 12.9	23 27.6	144.30	0.73	.0051787	34.5	14 14 44.07
18	230	145 21 56.9	21 11.5	144.37	0.78	.0050953	35.0	14 10 48.16
19	231	146 19 42.5	18 56.9	144.44	0.79	.0050107	35.5	14 6 52.26
20	232	147 17 29.8	16 44.1	144.51	0.77	.0049248	36.1	14 2 56.35
21	233	148 15 18.8	14 33.1	144.58	0.72	.0048375	36.7	13 59 0.44
22	234	149 13 9.8	12 23.9	144.66	0.64	.0047486	37.4	13 55 4.53
23	235	150 11 2.4	10 16.4	144.72	0.54	.0046581	38.1	13 51 8.62
24	236	151 8 56.5	8 10.3	144.79	0.43	.0045659	38.8	13 47 12.71
25	237	152 6 52.3	6 6.0	144.86	0.31	.0044720	39.5	13 43 16.80
26	238	153 4 49.8	4 3.4	144.93	0.17	.0043762	40.2	13 39 20.89
27	239	154 2 49.1	2 2.6	145.01	+0.04	.0042785	41.0	13 35 24.98
28	240	155 0 50.1	0 3.5	145.07	−0.08	.0041789	41.8	13 31 29.07
29	241	155 58 52.7	58 5.9	145.14	0.19	.0040774	42.6	13 27 33.16
30	242	156 56 56.7	56 9.8	145.20	0.28	.0039742	43.3	13 23 37.26
31	243	157 55 2.2	54 15.2	145.26	0.34	.0038693	44.0	13 19 41.36
32	244	158 53 9.3	52 22.2	145.33	−0.38	0.0037627	−44.7	13 15 45.44

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January $0^d.0$.

Diff. for 1 hour.
$-9^s.8296$
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 27.5	16 26.6	60 17.6	−0.12	60 14.5	−0.39	2 23.5	2.09	2.6
2	16 25.0	16 22.5	60 8.4	0.63	59 59.6	0.84	3 13.4	2.08	3.6
3	16 19.5	16 16.0	59 48.4	1.02	59 35.4	1.16	4 3.6	2.12	4.6
4	16 12.0	16 7.7	59 20.8	1.27	59 5.0	1.35	4 55.3	2.20	5.6
5	16 3.2	15 58.6	58 48.4	1.41	58 31.3	1.44	5 49.1	2.30	6.6
6	15 53.8	15 49.1	58 14.0	1.45	57 56.6	1.45	6 45.3	2.38	7.6
7	15 44.4	15 39.8	57 39.3	1.43	57 22.3	1.41	7 43.0	2.41	8.6
8	15 35.2	15 30.8	57 5.6	1.37	56 49.3	1.34	8 40.7	2.37	9.6
9	15 26.4	15 22.2	56 33.4	1.31	56 17.9	1.27	9 36.6	2.27	10.6
10	15 18.2	15 14.2	56 3.0	1.23	55 48.5	1.18	10 29.3	2.12	11.6
11	15 10.4	15 6.8	55 34.7	1.13	55 21.5	1.08	11 18.2	1.96	12.6
12	15 3.5	15 0.3	55 8.9	1.01	54 57.2	0.95	12 3.6	1.82	13.6
13	14 57.3	14 54.6	54 46.3	0.87	54 36.3	0.79	12 46.1	1.72	14.6
14	14 52.1	14 50.0	54 27.3	0.70	54 19.6	0.59	13 26.6	1.66	15.6
15	14 48.3	14 46.9	54 13.2	0.47	54 8.4	0.34	14 6.1	1.64	16.6
16	14 46.1	14 45.7	54 5.2	−0.19	54 3.8	−0.04	14 45.6	1.66	17.6
17	14 45.9	14 46.6	54 4.4	+0.14	54 7.2	+0.32	15 26.1	1.73	18.6
18	14 47.9	14 49.9	54 12.1	0.51	54 19.4	0.70	16 8.8	1.83	19.6
19	14 52.6	14 55.9	54 29.1	0.91	54 41.2	1.11	16 54.4	1.97	20.6
20	14 59.8	15 4.4	54 55.8	1.31	55 12.7	1.51	17 43.5	2.13	21.6
21	15 9.7	15 15.6	55 32.0	1.70	55 53.6	1.88	18 36.3	2.28	22.6
22	15 22.0	15 28.8	56 17.0	2.03	56 42.2	2.16	19 32.3	2.38	23.6
23	15 36.0	15 43.6	57 8.8	2.26	57 36.4	2.33	20 30.0	2.42	24.6
24	15 51.2	15 58.9	58 4.5	2.35	58 32.6	2.32	21 27.8	2.39	25.6
25	16 6.4	16 13.5	59 0.1	2.24	59 26.2	2.10	22 24.2	2.31	26.6
26	16 20.1	16 25.9	59 50.3	1.91	60 11.8	1.67	23 18.7	2.23	27.6
27	16 30.9	16 34.8	60 30.1	1.37	60 44.6	1.04	δ		28.6
28	16 37.7	16 39.2	60 54.9	+0.68	61 0.7	+0.30	0 11.3	2.17	0.3
29	16 39.6	16 38.7	61 2.0	−0.08	60 58.8	−0.45	1 3.0	2.15	1.3
30	16 36.7	16 33.6	60 51.3	0.80	60 39.8	1.10	1 54.7	2.17	2.3
31	16 29.5	16 24.6	60 24.9	1.37	60 7.1	1.60	2 47.6	2.24	3.3
32	16 19.1	16 13.2	59 46.8	−1.78	59 24.9	−1.89	3 42.4	2.33	4.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 58 31.09	2.1876	N. 3 35 38.0	16.772
1	11 0 42.30	2.1860	3 18 51.1	16.789
2	11 2 53.41	2.1844	3 2 3.3	16.803
3	11 5 4.43	2.1830	2 45 14.7	16.816
4	11 7 15.37	2.1817	2 28 25.4	16.827
5	11 9 26.23	2.1804	2 11 35.4	16.837
6	11 11 37.02	2.1792	1 54 44.9	16.845
7	11 13 47.73	2.1780	1 37 54.0	16.851
8	11 15 58.38	2.1770	1 21 2.8	16.855
9	11 18 8.97	2.1760	1 4 11.4	16.857
10	11 20 19.50	2.1751	0 47 19.9	16.858
11	11 22 29.98	2.1743	0 30 28.4	16.858
12	11 24 40.42	2.1736	N. 0 13 36.9	16.856
13	11 26 50.82	2.1729	S. 0 3 14.3	16.851
14	11 29 1.17	2.1723	0 20 5.2	16.845
15	11 31 11.49	2.1718	0 36 55.7	16.837
16	11 33 21.79	2.1714	0 53 45.6	16.827
17	11 35 32.06	2.1710	1 10 34.9	16.816
18	11 37 42.31	2.1707	1 27 23.5	16.803
19	11 39 52.55	2.1706	1 44 11.3	16.788
20	11 42 2.78	2.1705	2 0 58.1	16.772
21	11 44 13.01	2.1705	2 17 43.9	16.754
22	11 46 23.24	2.1705	2 34 28.6	16.735
23	11 48 33.47	2.1706	S. 2 51 12.1	16.714

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 50 43.71	2.1708	S. 3 7 54.3	16.692
1	11 52 53.97	2.1712	3 24 35.1	16.667
2	11 55 4.25	2.1715	3 41 14.3	16.640
3	11 57 14.55	2.1719	3 57 51.9	16.612
4	11 59 24.88	2.1725	4 14 27.8	16.582
5	12 1 35.25	2.1731	4 31 1.8	16.551
6	12 3 45.65	2.1737	4 47 33.9	16.518
7	12 5 56.09	2.1744	5 4 4.0	16.484
8	12 8 6.58	2.1753	5 20 32.0	16.448
9	12 10 17.13	2.1763	5 36 57.8	16.411
10	12 12 27.74	2.1773	5 53 21.3	16.372
11	12 14 38.41	2.1783	6 9 42.4	16.331
12	12 16 49.14	2.1794	6 26 1.0	16.288
13	12 18 59.94	2.1807	6 42 17.0	16.244
14	12 21 10.82	2.1820	6 58 30.3	16.199
15	12 23 21.78	2.1833	7 14 40.9	16.152
16	12 25 32.82	2.1847	7 30 48.6	16.103
17	12 27 43.95	2.1862	7 46 53.3	16.053
18	12 29 55.17	2.1878	8 2 54.9	16.001
19	12 32 6.49	2.1895	8 18 53.4	15.947
20	12 34 17.91	2.1912	8 34 48.6	15.892
21	12 36 29.43	2.1929	8 50 40.4	15.835
22	12 38 41.06	2.1948	9 6 28.8	15.777
23	12 40 52.81	2.1968	9 22 13.7	15.718
24	12 43 4.68	2.1988	S. 9 37 55.0	15.657

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 43 4.68	2.1988	S. 9 37 55.0	15.657
1	12 45 16.67	2.2009	9 53 32.5	15.594
2	12 47 28.79	2.2030	10 9 6.2	15.530
3	12 49 41.03	2.2051	10 24 36.1	15.465
4	12 51 53.40	2.2074	10 40 2.0	15.397
5	12 54 5.92	2.2098	10 55 23.8	15.328
6	12 56 18.58	2.2122	11 10 41.4	15.257
7	12 58 31.39	2.2147	11 25 54.7	15.186
8	13 0 44.34	2.2171	11 41 3.7	15.113
9	13 2 57.44	2.2197	11 56 8.3	15.039
10	13 5 10.70	2.2223	12 11 8.4	14.962
11	13 7 24.12	2.2250	12 26 3.8	14.884
12	13 9 37.70	2.2278	12 40 54.5	14.805
13	13 11 51.45	2.2306	12 55 40.4	14.725
14	13 14 5.37	2.2334	13 10 21.5	14.643
15	13 16 19.46	2.2362	13 24 57.6	14.559
16	13 18 33.72	2.2392	13 39 28.6	14.474
17	13 20 48.17	2.2423	13 53 54.5	14.388
18	13 23 2.80	2.2454	14 8 15.2	14.301
19	13 25 17.62	2.2485	14 22 30.6	14.212
20	13 27 32.62	2.2516	14 36 40.6	14.120
21	13 29 47.81	2.2548	14 50 45.0	14.028
22	12 32 3.20	2.2581	15 4 43.9	13.935
23	13 34 18.78	2.2613	S. 15 18 37.2	13.641

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 36 34.56	2.2647	S. 15 32 24.8	13.744
1	13 38 50.54	2.2681	15 46 6.5	13.646
2	13 41 6.73	2.2715	15 59 42.3	13.547
3	13 43 23.12	2.2749	16 13 12.2	13.447
4	13 45 39.72	2.2784	16 26 36.0	13.346
5	13 47 56.53	2.2818	16 39 53.7	13.242
6	13 50 13.54	2.2853	16 53 5.1	13.137
7	13 52 30.77	2.2890	17 6 10.2	13.032
8	13 54 48.22	2.2926	17 19 9.0	12.926
9	13 57 5.88	2.2962	17 32 1.3	12.817
10	13 59 23.76	2.2998	17 44 47.1	12.707
11	14 1 41.86	2.3035	17 57 26.2	12.596
12	14 4 0.18	2.3072	18 9 58.6	12.483
13	14 6 18.72	2.3109	18 22 24.2	12.370
14	14 8 37.49	2.3147	18 34 43.0	12.256
15	14 10 56.48	2.3184	18 46 54.9	12.140
16	14 13 15.70	2.3222	18 58 59.8	12.022
17	14 15 35.14	2.3259	19 10 57.6	11.903
18	14 17 54.81	2.3297	19 22 48.2	11.783
19	14 20 14.71	2.3335	19 34 31.6	11.662
20	14 22 34.83	2.3372	19 46 7.7	11.540
21	14 24 55.18	2.3410	19 57 36.4	11.417
22	14 27 15.75	2.3448	20 8 57.7	11.292
23	14 29 36.55	2.3486	20 20 11.4	11.165
24	14 31 57.58	2.3523	S. 20 31 17.5	11.038

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 31 57.58	2.3523	S.20 31 17.5	11.038
1	14 34 18.83	2.3561	20 42 16.0	10.911
2	14 36 40.31	2.3599	20 53 6.8	10.781
3	14 39 2.02	2.3637	21 3 49.7	10.649
4	14 41 23.95	2.3674	21 14 24.7	10.518
5	14 43 46.11	2.3712	21 24 51.8	10.386
6	14 46 8.49	2.3748	21 35 11.0	10.252
7	14 48 31.09	2.3785	21 45 22.1	10.117
8	14 50 53.91	2.3822	21 55 25.0	9.980
9	14 53 16.95	2.3858	22 5 19.7	9.843
10	14 55 40.21	2.3895	22 15 6.2	9.705
11	14 58 3.69	2.3931	22 24 44.3	9.565
12	15 0 27.38	2.3967	22 34 14.0	9.425
13	15 2 51.29	2.4002	22 43 35.3	9.284
14	15 5 15.40	2.4036	22 52 48.1	9.142
15	15 7 39.72	2.4070	23 1 52.3	8.998
16	15 10 4.24	2.4104	23 10 47.9	8.854
17	15 12 28.97	2.4138	23 19 34.8	8.709
18	15 14 53.90	2.4171	23 28 13.0	8.563
19	15 17 19.02	2.4203	23 36 42.4	8.416
20	15 19 44.34	2.4236	23 45 2.9	8.268
21	15 22 9.85	2.4267	23 53 14.5	8.119
22	15 24 35.55	2.4298	24 1 17.2	7.969
23	15 27 1.43	2.4329	S.24 9 10.8	7.818

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 29 27.50	2.4360	S.24 16 55.4	7.667
1	15 31 53.75	2.4389	24 24 30.9	7.515
2	15 34 20.17	2.4417	24 31 57.2	7.362
3	15 36 46.75	2.4444	24 39 14.4	7.209
4	15 39 13.50	2.4472	24 46 22.3	7.054
5	15 41 40.41	2.4498	24 53 20.9	6.899
6	15 44 7.48	2.4524	25 0 10.2	6.743
7	15 46 34.70	2.4549	25 6 50.1	6.587
8	15 49 2.07	2.4573	25 13 20.6	6.430
9	15 51 29.58	2.4597	25 19 41.7	6.272
10	15 53 57.23	2.4620	25 25 53.3	6.114
11	15 56 25.02	2.4642	25 31 55.4	5.955
12	15 58 52.93	2.4662	25 37 47.9	5.795
13	16 1 20.96	2.4682	25 43 30.8	5.635
14	16 3 49.11	2.4702	25 49 4.1	5.475
15	16 6 17.38	2.4720	25 54 27.8	5.314
16	16 8 45.75	2.4737	25 59 41.8	5.152
17	16 11 14.22	2.4753	26 4 46.0	4.989
18	16 13 42.79	2.4769	26 9 40.5	4.827
19	16 16 11.45	2.4783	26 14 25.3	4.665
20	16 18 40.19	2.4796	26 19 0.3	4.502
21	16 21 9.00	2.4808	26 23 25.5	4.338
22	16 23 37.88	2.4819	26 27 40.9	4.174
23	16 26 6.83	2.4830	26 31 46.4	4.009
24	16 28 35.84	2.4839	S.26 35 42.0	3.844

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 28 35.84	2.4839	S.26 35 42.0	3.844
1	16 31 4.90	2.4847	26 39 27.7	3.680
2	16 33 34.01	2.4855	26 43 3.6	3.516
3	16 36 3.16	2.4861	26 46 29.6	3.351
4	16 38 32.34	2.4865	26 49 45.7	3.185
5	16 41 1.54	2.4868	26 52 51.8	3.019
6	16 43 30.76	2.4871	26 55 48.0	2.854
7	16 46 0.00	2.4873	26 58 34.3	2.688
8	16 48 29.24	2.4873	27 1 10.6	2.522
9	16 50 58.48	2.4873	27 3 37.0	2.357
10	16 53 27.72	2.4872	27 5 53.4	2.191
11	16 55 56.94	2.4868	27 7 59.9	2.025
12	16 58 26.13	2.4863	27 9 56.4	1.859
13	17 0 55.29	2.4858	27 11 43.0	1.694
14	17 3 24.42	2.4852	27 13 19.7	1.528
15	17 5 53.51	2.4844	27 14 46.4	1.362
16	17 8 22.55	2.4835	27 16 3.2	1.197
17	17 10 51.53	2.4824	27 17 10.2	1.032
18	17 13 20.44	2.4812	27 18 7.2	0.867
19	17 15 49.28	2.4800	27 18 54.3	0.702
20	17 18 18.04	2.4787	27 19 31.5	0.537
21	17 20 46.72	2.4773	27 19 58.8	0.373
22	17 23 15.31	2.4757	27 20 16.3	0.210
23	17 25 43.80	2.4738	S.27 20 24.0	−0.046

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 28 12.17	2.4719	S.27 20 21.8	+0.118
1	17 30 40.43	2.4700	27 20 9.8	0.281
2	17 33 8.57	2.4680	27 19 48.1	0.443
3	17 35 36.59	2.4658	27 19 16.6	0.605
4	17 38 4.47	2.4635	27 18 35.5	0.766
5	17 40 32.21	2.4611	27 17 44.7	0.927
6	17 42 59.80	2.4585	27 16 44.2	1.088
7	17 45 27.23	2.4558	27 15 34.1	1.248
8	17 47 54.50	2.4532	27 14 14.4	1.407
9	17 50 21.61	2.4504	27 12 45.2	1.566
10	17 52 48.55	2.4475	27 11 6.5	1.724
11	17 55 15.31	2.4444	27 9 18.3	1.882
12	17 57 41.88	2.4412	27 7 20.6	2.040
13	18 0 8.25	2.4379	27 5 13.5	2.196
14	18 2 34.43	2.4346	27 2 57.1	2.352
15	18 5 0.40	2.4310	27 0 31.3	2.507
16	18 7 26.15	2.4274	26 57 56.3	2.661
17	18 9 51.69	2.4238	26 55 12.0	2.815
18	18 12 17.01	2.4201	26 52 18.5	2.968
19	18 14 42.10	2.4162	26 49 15.8	3.120
20	18 17 6.95	2.4122	26 46 4.1	3.271
21	18 19 31.57	2.4082	26 42 43.3	3.422
22	18 21 55.94	2.4041	26 39 13.5	3.571
23	18 24 20.06	2.3998	26 35 34.8	3.719
24	18 26 43.92	2.3955	S.26 31 47.2	3.867

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 9.					SUNDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 26 43.92	2.3955	S. 26 31 47.2	3.867	0	20 15 37.93	2.1295	S. 20 55 41.6	9.694
1	18 29 7.52	2.3911	26 27 50.8	4.014	1	20 17 45.52	2.1235	20 45 57.2	9.786
2	18 31 30.85	2.3867	26 23 45.5	4.161	2	20 19 52.75	2.1176	20 36 7.3	9.877
3	18 33 53.92	2.3822	26 19 31.5	4.306	3	20 21 59.63	2.1117	20 26 11.9	9.967
4	18 36 16.71	2.3775	26 15 8.8	4.450	4	20 24 6.16	2.1058	20 16 11.2	10.056
5	18 38 39.22	2.3728	26 10 37.5	4.592	5	20 26 12.33	2.0999	20 6 5.2	10.142
6	18 41 1.45	2.3681	26 5 57.7	4.734	6	20 28 18.15	2.0941	19 55 54.1	10.228
7	18 43 23.39	2.3632	26 1 9.4	4.876	7	20 30 23.62	2.0883	19 45 37.8	10.314
8	18 45 45.03	2.3582	25 56 12.6	5.017	8	20 32 28.75	2.0826	19 35 16.4	10.398
9	18 48 6.37	2.3532	25 51 7.4	5.156	9	20 34 33.53	2.0768	19 24 50.0	10.481
10	18 50 27.41	2.3482	25 45 53.9	5.294	10	20 36 37.96	2.0710	19 14 18.7	10.562
11	18 52 48.15	2.3431	25 40 32.1	5.431	11	20 38 42.05	2.0653	19 3 42.6	10.642
12	18 55 8.58	2.3379	25 35 2.2	5.567	12	20 40 45.80	2.0597	18 53 1.7	10.721
13	18 57 28.70	2.3327	25 29 24.1	5.702	13	20 42 49.21	2.0540	18 42 16.1	10.798
14	18 59 48.50	2.3273	25 23 37.9	5.836	14	20 44 52.28	2.0484	18 31 25.9	10.875
15	19 2 7.98	2.3220	25 17 43.8	5.969	15	20 46 55.02	2.0428	18 20 31.1	10.951
16	19 4 27.14	2.3166	25 11 41.7	6.101	16	20 48 57.42	2.0372	18 9 31.8	11.025
17	19 6 45.97	2.3111	25 5 31.7	6.231	17	20 50 59.49	2.0317	17 58 28.1	11.098
18	19 9 4.47	2.3056	24 59 14.0	6.360	18	20 53 1.28	2.0262	17 47 20.0	11.171
19	19 11 22.64	2.3001	24 52 48.5	6.489	19	20 55 2.64	2.0208	17 36 7.6	11.242
20	19 13 40.48	2.2946	24 46 15.3	6.616	20	20 57 3.73	2.0154	17 24 51.0	11.310
21	19 15 57.99	2.2890	24 39 34.6	6.742	21	20 59 4.49	2.0100	17 13 30.4	11.378
22	19 18 15.16	2.2833	24 32 46.3	6.867	22	21 1 4.93	2.0048	17 2 5.7	11.446
23	19 20 31.98	2.2775	S. 24 25 50.5	6.991	23	21 3 5.06	1.9996	S. 16 50 36.9	11.513
	SATURDAY 10.					MONDAY 12.			
0	19 22 48.46	2.2718	S. 24 18 47.4	7.113	0	21 5 4.88	1.9943	S. 16 39 4.2	11.578
1	19 25 4.60	2.2661	24 11 36.9	7.235	1	21 7 4.38	1.9891	16 27 27.6	11.642
2	19 27 20.39	2.2603	24 4 19.2	7.355	2	21 9 3.57	1.9840	16 15 47.2	11.704
3	19 29 35.83	2.2544	23 56 54.3	7.474	3	21 11 2.46	1.9789	16 4 3.1	11.766
4	19 31 50.92	2.2486	23 49 22.3	7.592	4	21 13 1.04	1.9738	15 52 15.3	11.827
5	19 34 5.66	2.2427	23 41 43.3	7.708	5	21 14 59.32	1.9688	15 40 23.9	11.886
6	19 36 20.05	2.2368	23 33 57.3	7.824	6	21 16 57.30	1.9639	15 28 29.0	11.943
7	19 38 34.08	2.2309	23 26 4.4	7.938	7	21 18 54.99	1.9590	15 16 30.7	12.001
8	19 40 47.76	2.2251	23 18 4.7	8.052	8	21 20 52.38	1.9541	15 4 28.9	12.058
9	19 43 1.09	2.2192	23 9 58.2	8.163	9	21 22 49.48	1.9493	14 52 23.7	12.114
10	19 45 14.06	2.2132	23 1 45.1	8.273	10	21 24 46.29	1.9445	14 40 15.2	12.167
11	19 47 26.67	2.2072	22 53 25.4	8.383	11	21 26 42.82	1.9398	14 28 3.6	12.219
12	19 49 38.92	2.2012	22 44 59.1	8.492	12	21 28 39.07	1.9352	14 15 48.9	12.271
13	19 51 50.81	2.1952	22 36 26.4	8.598	13	21 30 35.04	1.9306	14 3 31.1	12.322
14	19 54 2.34	2.1892	22 27 47.3	8.704	14	21 32 30.74	1.9260	13 51 10.2	12.372
15	19 56 13.52	2.1833	22 19 1.9	8.808	15	21 34 26.16	1.9215	13 38 46.4	12.421
16	19 58 24.34	2.1773	22 10 10.3	8.912	16	21 36 21.32	1.9171	13 26 19.7	12.469
17	20 0 34.80	2.1712	22 1 12.5	9.014	17	21 38 16.22	1.9127	13 13 50.1	12.516
18	20 2 44.89	2.1652	21 52 8.6	9.115	18	21 40 10.85	1.9083	13 1 17.8	12.561
19	20 4 54.62	2.1592	21 42 58.7	9.214	19	21 42 5.22	1.9041	12 48 42.8	12.606
20	20 7 4.00	2.1533	21 33 42.9	9.312	20	21 43 59.34	1.8999	12 36 5.1	12.650
21	20 9 13.02	2.1473	21 24 21.2	9.410	21	21 45 53.21	1.8958	12 23 24.8	12.693
22	20 11 21.68	2.1413	21 14 53.7	9.506	22	21 47 46.83	1.8917	12 10 41.9	12.735
23	20 13 29.98	2.1354	21 5 20.5	9.601	23	21 49 40.21	1.8877	11 57 56.6	12.775
24	20 15 37.93	2.1295	S. 20 55 41.6	9.694	24	21 51 33.35	1.8837	S. 11 45 8.9	12.814

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 51 33.35	1.8837	S. 11 45 8.9	12.814
1	21 53 26.25	1.8797	11 32 18.9	12.853
2	21 55 18.92	1.8758	11 19 26.5	12.892
3	21 57 11.35	1.8719	11 6 31.9	12.928
4	21 59 3.55	1.8682	10 53 35.1	12.964
5	22 0 55.54	1.8646	10 40 36.2	12.999
6	22 2 47.31	1.8610	10 27 35.2	13.033
7	22 4 38.86	1.8574	10 14 32.2	13.066
8	22 6 30.20	1.8539	10 1 27.3	13.097
9	22 8 21.33	1.8504	9 48 20.5	13.128
10	22 10 12.25	1.8470	9 35 11.9	13.159
11	22 12 2.97	1.8437	9 22 1.4	13.189
12	22 13 53.50	1.8405	9 8 49.2	13.217
13	22 15 43.83	1.8373	8 55 35.3	13.245
14	22 17 33.97	1.8342	8 42 19.8	13.271
15	22 19 23.93	1.8312	8 29 2.8	13.297
16	22 21 13.71	1.8282	8 15 44.2	13.322
17	22 23 3.31	1.8252	8 2 24.2	13.345
18	22 24 52.73	1.8223	7 49 2.8	13.368
19	22 26 41.98	1.8195	7 35 40.0	13.391
20	22 28 31.07	1.8167	7 22 15.9	13.412
21	22 30 19.99	1.8140	7 8 50.5	13.433
22	22 32 8.75	1.8114	6 55 23.9	13.452
23	22 33 57.36	1.8089	S. 6 41 56.2	13.471

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 35 45.82	1.8064	S. 6 28 27.4	13.489
1	22 37 34.13	1.8040	6 14 57.5	13.507
2	22 39 22.30	1.8016	6 1 26.6	13.523
3	22 41 10.32	1.7993	5 47 54.8	13.538
4	22 42 58.21	1.7971	5 34 22.1	13.552
5	22 44 45.97	1.7949	5 20 48.6	13.566
6	22 46 33.60	1.7927	5 7 14.2	13.579
7	22 48 21.10	1.7907	4 53 39.1	13.591
8	22 50 8.49	1.7888	4 40 3.3	13.602
9	22 51 55.76	1.7869	4 26 26.8	13.613
10	22 53 42.92	1.7851	4 12 49.7	13.623
11	22 55 29.97	1.7833	3 59 12.0	13.632
12	22 57 16.92	1.7817	3 45 33.8	13.640
13	22 59 3.77	1.7800	3 31 55.2	13.648
14	23 0 50.52	1.7783	3 18 16.1	13.655
15	23 2 37.17	1.7767	3 4 36.6	13.661
16	23 4 23.73	1.7753	2 50 56.8	13.665
17	23 6 10.21	1.7741	2 37 16.8	13.669
18	23 7 56.62	1.7728	2 23 36.5	13.673
19	23 9 42.95	1.7716	2 9 56.0	13.676
20	23 11 29.21	1.7703	1 56 15.4	13.678
21	23 13 15.39	1.7692	1 42 34.6	13.680
22	23 15 1.51	1.7682	1 28 53.8	13.680
23	23 16 47.57	1.7672	1 15 13.0	13.680
24	23 18 33.57	1.7662	S. 1 1 32.2	13.679

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 18 33.57	1.7662	S. 1 1 32.2	13.679
1	23 20 19.52	1.7654	0 47 51.5	13.677
2	23 22 5.42	1.7647	0 34 10.9	13.675
3	23 23 51.28	1.7640	0 20 30.5	13.672
4	23 25 37.10	1.7633	S. 0 6 50.3	13.668
5	23 27 22.88	1.7627	N. 0 6 49.6	13.663
6	23 29 8.62	1.7622	0 20 29.3	13.658
7	23 30 54.34	1.7617	0 34 8.6	13.652
8	23 32 40.03	1.7613	0 47 47.5	13.646
9	23 34 25.70	1.7610	1 1 26.1	13.639
10	23 36 11.35	1.7608	1 15 4.2	13.630
11	23 37 56.99	1.7606	1 28 41.7	13.621
12	23 39 42.62	1.7604	1 42 18.7	13.612
13	23 41 28.24	1.7604	1 55 55.1	13.601
14	23 43 13.87	1.7605	2 9 30.8	13.590
15	23 44 59.50	1.7605	2 23 5.9	13.578
16	23 46 45.13	1.7607	2 36 40.2	13.566
17	23 48 30.78	1.7609	2 50 13.8	13.553
18	23 50 16.44	1.7612	3 3 46.6	13.539
19	23 52 2.12	1.7616	3 17 18.5	13.524
20	23 53 47.83	1.7620	3 30 49.5	13.509
21	23 55 33.56	1.7624	3 44 19.6	13.494
22	23 57 19.32	1.7630	3 57 48.8	13.477
23	23 59 5.12	1.7636	N. 4 11 16.9	13.459

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 0 50.95	1.7642	N. 4 24 43.9	13.441
1	0 2 36.82	1.7650	4 38 9.8	13.422
2	0 4 22.75	1.7659	4 51 34.6	13.403
3	0 6 8.73	1.7667	5 4 58.2	13.383
4	0 7 54.76	1.7677	5 18 20.6	13.362
5	0 9 40.85	1.7687	5 31 41.7	13.341
6	0 11 27.00	1.7697	5 45 1.5	13.319
7	0 13 13.21	1.7709	5 58 20.0	13.297
8	0 14 59.50	1.7722	6 11 37.1	13.273
9	0 16 45.87	1.7735	6 24 52.7	13.248
10	0 18 32.32	1.7748	6 38 6.8	13.223
11	0 20 18.85	1.7762	6 51 19.4	13.198
12	0 22 5.46	1.7776	7 4 30.5	13.172
13	0 23 52.16	1.7792	7 17 40.0	13.144
14	0 25 38.96	1.7808	7 30 47.8	13.116
15	0 27 25.86	1.7825	7 43 53.9	13.087
16	0 29 12.86	1.7842	7 56 58.3	13.058
17	0 30 59.96	1.7859	8 10 0.9	13.029
18	0 32 47.17	1.7878	8 23 1.8	12.999
19	0 34 34.50	1.7898	8 36 0.8	12.967
20	0 36 21.95	1.7917	8 48 57.9	12.935
21	0 38 9.51	1.7937	9 1 53.0	12.902
22	0 39 57.20	1.7959	9 14 46.1	12.868
23	0 41 45.02	1.7982	9 27 37.2	12.835
24	0 43 32.98	1.8004	N. 9 40 26.3	12.801

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 43 32.98	1.8004	N. 9 40 26.3	12.801
1	0 45 21.07	1.8027	9 53 13.3	12.765
2	0 47 9.30	1.8051	10 5 58.1	12.728
3	0 48 57.68	1.8076	10 18 40.6	12.690
4	0 50 46.21	1.8101	10 31 20.9	12.653
5	0 52 34.89	1.8127	10 43 59.0	12.616
6	0 54 23.73	1.8153	10 56 34.8	12.577
7	0 56 12.73	1.8180	11 9 8.2	12.536
8	0 58 1.89	1.8208	11 21 39.1	12.495
9	0 59 51.22	1.8236	11 34 7.6	12.454
10	1 1 40.72	1.8265	11 46 33.6	12.412
11	1 3 30.40	1.8295	11 58 57.0	12.369
12	1 5 20.26	1.8325	12 11 17.9	12.326
13	1 7 10.30	1.8356	12 23 36.1	12.281
14	1 9 0.53	1.8387	12 35 51.6	12.236
15	1 10 50.95	1.8419	12 48 4.4	12.191
16	1 12 41.56	1.8452	13 0 14.5	12.144
17	1 14 32.37	1.8485	13 12 21.7	12.096
18	1 16 23.38	1.8518	13 24 26.0	12.047
19	1 18 14.59	1.8553	13 36 27.4	11.999
20	1 20 6.02	1.8589	13 48 25.9	11.950
21	1 21 57.66	1.8625	14 0 21.4	11.899
22	1 23 49.52	1.8661	14 12 13.8	11.847
23	1 25 / 60	1.8697	N.14 24 3.1	11.795

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 27 33.89	1.8734	N.14 35 49.2	11.742
1	1 29 26.41	1.8773	14 47 32.1	11.688
2	1 31 19.17	1.8812	14 59 11.8	11.635
3	1 33 12.16	1.8851	15 10 48.3	11.580
4	1 35 5.38	1.8891	15 22 21.4	11.523
5	1 36 58.85	1.8932	15 33 51.1	11.466
6	1 38 52.56	1.8973	15 45 17.3	11.408
7	1 40 46.52	1.9014	15 56 40.0	11.349
8	1 42 40.73	1.9056	16 7 59.2	11.291
9	1 44 35.19	1.9098	16 19 14.9	11.231
10	1 46 29.91	1.9142	16 30 26.9	11.169
11	1 48 24.90	1.9187	16 41 35.2	11.106
12	1 50 20.15	1.9230	16 52 39.7	11.043
13	1 52 15.66	1.9274	17 3 40.4	10.980
14	1 54 11.44	1.9320	17 14 37.3	10.917
15	1 56 7.50	1.9367	17 25 30.4	10.851
16	1 58 3.84	1.9413	17 36 19.5	10.784
17	2 0 0.46	1.9460	17 47 4.5	10.717
18	2 1 57.36	1.9507	17 57 45.5	10.649
19	2 3 54.55	1.9555	18 8 22.4	10.580
20	2 5 52.02	1.9603	18 18 55.1	10.511
21	2 7 49.78	1.9652	18 29 23.7	10.441
22	2 9 47.84	1.9702	18 39 48.0	10.368
23	2 11 46.20	1.9751	18 50 7.9	10.295
24	2 13 44.85	1.9801	N.19 0 23.4	10.222

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 13 44.85	1.9801	N.19 0 23.4	10.222
1	2 15 43.81	1.9852	19 10 34.5	10.148
2	2 17 43.08	1.9903	19 20 41.1	10.073
3	2 19 42.65	1.9954	19 30 43.2	9.997
4	2 21 42.53	2.0007	19 40 40.7	9.919
5	2 23 42.73	2.0059	19 50 33.5	9.841
6	2 25 43.24	2.0112	20 0 21.6	9.762
7	2 27 44.07	2.0165	20 10 4.9	9.682
8	2 29 45.22	2.0219	20 19 43.4	9.601
9	2 31 46.70	2.0274	20 29 17.0	9.518
10	2 33 48.51	2.0328	20 38 45.6	9.435
11	2 35 50.64	2.0382	20 48 9.2	9.352
12	2 37 53.10	2.0437	20 57 27.8	9.267
13	2 39 55.89	2.0493	21 6 41.3	9.181
14	2 41 59.02	2.0549	21 15 49.5	9.094
15	2 44 2.48	2.0605	21 24 52.5	9.006
16	2 46 6.28	2.0662	21 33 50.2	8.917
17	2 48 10.42	2.0718	21 42 42.5	8.827
18	2 50 14.89	2.0774	21 51 29.4	8.736
19	2 52 19.71	2.0832	22 0 10.8	8.644
20	2 54 24.87	2.0889	22 8 46.7	8.552
21	2 56 30.38	2.0947	22 17 17.0	8.458
22	2 58 36.24	2.1005	22 25 41.6	8.363
23	3 0 42.44	2.1063	N.22 34 0.5	8.266

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 2 48.99	2.1121	N.22 42 13.5	8.168
1	3 4 55.89	2.1179	22 50 20.7	8.071
2	3 7 3.14	2.1238	22 58 22.0	7.972
3	3 9 10.75	2.1297	23 6 17.3	7.871
4	3 11 18.71	2.1356	23 14 6.5	7.769
5	3 13 27.02	2.1414	23 21 49.6	7.667
6	3 15 35.68	2.1473	23 29 26.6	7.564
7	3 17 44.70	2.1532	23 36 57.3	7.459
8	3 19 54.07	2.1592	23 44 21.7	7.354
9	3 22 3.80	2.1651	23 51 39.8	7.247
10	3 24 13.88	2.1710	23 58 51.4	7.139
11	3 26 24.32	2.1770	24 5 56.5	7.030
12	3 28 35.12	2.1829	24 12 55.0	6.920
13	3 30 46.27	2.1888	24 19 46.9	6.809
14	3 32 57.78	2.1948	24 26 32.1	6.697
15	3 35 9.65	2.2007	24 33 10.6	6.585
16	3 37 21.87	2.2066	24 39 42.3	6.471
17	3 39 34.44	2.2125	24 46 7.1	6.355
18	3 41 47.37	2.2184	24 52 24.9	6.239
19	3 44 0.65	2.2243	24 58 35.7	6.122
20	3 46 14.28	2.2302	25 4 39.5	6.003
21	3 48 28.27	2.2361	25 10 36.1	5.883
22	3 50 42.61	2.2418	25 16 25.5	5.763
23	3 52 57.29	2.2476	25 22 7.7	5.641
24	3 55 12.32	2.2533	N.25 27 42.5	5.518

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 55 12.32	2.2533	N.25 27 42.5	5.518
1	3 57 27.69	2.2591	25 33 9.9	5.395
2	3 59 43.41	2.2649	25 38 29.9	5.270
3	4 1 59.48	2.2707	25 43 42.3	5.144
4	4 4 15.89	2.2763	25 48 47.1	5.017
5	4 6 32.63	2.2818	25 53 44.3	4.889
6	4 8 49.71	2.2874	25 58 33.8	4.760
7	4 11 7.12	2.2930	26 3 15.5	4.629
8	4 13 24.87	2.2986	26 7 49.3	4.498
9	4 15 42.95	2.3040	26 12 15.2	4.366
10	4 18 1.35	2.3094	26 16 33.2	4.233
11	4 20 20.08	2.3148	26 20 43.2	4.098
12	4 22 39.13	2.3202	26 24 45.0	3.963
13	4 24 58.50	2.3254	26 28 38.7	3.827
14	4 27 18.18	2.3307	26 32 24.2	3.689
15	4 29 38.18	2.3359	26 36 1.4	3.551
16	4 31 58.49	2.3410	26 39 30.3	3.412
17	4 34 19.10	2.3461	26 42 50.8	3.272
18	4 36 40.02	2.3511	26 46 2.9	3.131
19	4 39 1.23	2.3560	26 49 6.5	2.988
20	4 41 22.74	2.3609	26 52 1.5	2.845
21	4 43 44.54	2.3657	26 54 47.9	2.701
22	4 46 6.63	2.3705	26 57 25.6	2.556
23	4 48 29.00	2.3751	N.26 59 54.6	2.410

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 50 51.64	2.3797	N.27 2 14.8	2.263
1	4 53 14.56	2.3842	27 4 26.1	2.115
2	4 55 37.75	2.3887	27 6 28.6	1.967
3	4 58 1.20	2.3930	27 8 22.2	1.818
4	5 0 24.91	2.3973	27 10 6.8	1.667
5	5 2 48.88	2.4016	27 11 42.3	1.516
6	5 5 13.10	2.4057	27 13 8.7	1.364
7	5 7 37.56	2.4097	27 14 26.0	1.211
8	5 10 2.26	2.4137	27 15 34.1	1.057
9	5 12 27.20	2.4176	27 16 32.9	0.903
10	5 14 52.37	2.4213	27 17 22.5	0.749
11	5 17 17.76	2.4249	27 18 2.8	0.593
12	5 19 43.36	2.4285	27 18 33.7	0.437
13	5 22 9.18	2.4321	27 18 55.2	0.279
14	5 24 35.21	2.4354	27 19 7.2	+0.122
15	5 27 1.43	2.4387	27 19 9.8	−0.036
16	5 29 27.85	2.4419	27 19 2.9	0.195
17	5 31 54.46	2.4451	27 18 46.4	0.355
18	5 34 21.26	2.4481	27 18 20.3	0.515
19	5 36 48.23	2.4509	27 17 44.6	0.676
20	5 39 15.37	2.4537	27 16 59.2	0.837
21	5 41 42.67	2.4563	27 16 4.1	0.999
22	5 44 10.13	2.4590	27 14 59.3	1.162
23	5 46 37.75	2.4615	27 13 44.7	1.324
24	5 49 5.51	2.4638	N.27 12 20.4	1.487

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 49 5.51	2.4638	N.27 12 20.4	1.487
1	5 51 33.41	2.4661	27 10 46.2	1.652
2	5 54 1.44	2.4682	27 9 2.2	1.816
3	5 56 29.60	2.4703	27 7 8.3	1.980
4	5 58 57.88	2.4722	27 5 4.6	2.145
5	6 1 26.27	2.4741	27 2 50.9	2.311
6	6 3 54.77	2.4758	27 0 27.3	2.476
7	6 6 23.37	2.4774	26 57 53.8	2.642
8	6 8 52.06	2.4789	26 55 10.3	2.808
9	6 11 20.84	2.4803	26 52 16.8	2.975
10	6 13 49.70	2.4816	26 49 13.3	3.141
11	6 16 18.63	2.4827	26 45 59.9	3.307
12	6 18 47.62	2.4837	26 42 36.5	3.474
13	6 21 16.67	2.4847	26 39 3.0	3.641
14	6 23 45.78	2.4856	26 35 19.5	3.808
15	6 26 14.94	2.4863	26 31 26.0	3.976
16	6 28 44.14	2.4869	26 27 22.4	4.143
17	6 31 13.37	2.4874	26 23 8.8	4.310
18	6 33 42.63	2.4878	26 18 45.2	4.477
19	6 36 11.91	2.4881	26 14 11.5	4.645
20	6 38 41.20	2.4882	26 9 27.8	4.812
21	6 41 10.50	2.4883	26 4 34.1	4.979
22	6 43 39.80	2.4882	25 59 30.4	5.146
23	6 46 9.09	2.4881	N.25 54 16.6	5.313

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 48 38.37	2.4879	N.25 48 52.8	5.480
1	6 51 7.64	2.4876	25 43 19.0	5.646
2	6 53 36.88	2.4871	25 37 35.3	5.812
3	6 56 6.09	2.4865	25 31 41.6	5.977
4	6 58 35.26	2.4859	25 25 38.0	6.143
5	7 1 4.39	2.4852	25 19 24.4	6.309
6	7 3 33.48	2.4843	25 13 0.9	6.473
7	7 6 2.51	2.4833	25 6 27.6	6.638
8	7 8 31.48	2.4823	24 59 44.4	6.803
9	7 11 0.39	2.4812	24 52 51.3	6.967
10	7 13 29.23	2.4800	24 45 48.4	7.129
11	7 15 57.99	2.4787	24 38 35.8	7.292
12	7 18 26.67	2.4773	24 31 13.4	7.454
13	7 20 55.26	2.4758	24 23 41.3	7.616
14	7 23 23.77	2.4743	24 15 59.5	7.777
15	7 25 52.18	2.4726	24 8 8.1	7.937
16	7 28 20.48	2.4708	24 0 7.0	8.097
17	7 30 48.68	2.4691	23 51 56.4	8.257
18	7 33 16.77	2.4672	23 43 36.2	8.416
19	7 35 44.74	2.4652	23 35 6.5	8.573
20	7 38 12.59	2.4632	23 26 27.4	8.730
21	7 40 40.32	2.4611	23 17 38.9	8.887
22	7 43 7.92	2.4589	23 8 41.0	9.042
23	7 45 35.39	2.4567	22 59 33.9	9.196
24	7 48 2.72	2.4543	N.22 50 17.5	9.350

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.					TUESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 48 2.72	2.4543	N.22 50 17.5	9.350	0	9 42 29.43	2.3103	N.12 46 0.2	15.292
1	7 50 29.91	2.4520	22 40 51.9	9.503	1	9 44 47.96	2.3075	12 30 40.1	15.378
2	7 52 56.96	2.4496	22 31 17.1	9.655	2	9 47 6.33	2.3047	12 15 14.8	15.463
3	7 55 23.86	2.4471	22 21 33.3	9.806	3	9 49 24.53	2.3020	11 59 44.5	15.546
4	7 57 50.61	2.4445	22 11 40.4	9.957	4	9 51 42.57	2.2993	11 44 9.3	15.627
5	8 0 17.20	2.4418	22 1 38.5	10.106	5	9 54 0.45	2.2966	11 28 29.3	15.706
6	8 2 43.63	2.4392	21 51 27.7	10.254	6	9 56 18.16	2.2939	11 12 44.6	15.783
7	8 5 9.90	2.4365	21 41 8.0	10.401	7	9 58 35.72	2.2914	10 56 55.3	15.858
8	8 7 36.01	2.4338	21 30 39.6	10.547	8	10 0 53.13	2.2888	10 41 1.6	15.932
9	8 10 1.96	2.4311	21 20 2.4	10.693	9	10 3 10.38	2.2862	10 25 3.5	16.003
10	8 12 27.74	2.4282	21 9 16.5	10.837	10	10 5 27.48	2.2838	10 9 1.2	16.073
11	8 14 53.34	2.4252	20 58 22.0	10.979	11	10 7 44.44	2.2815	9 52 54.7	16.142
12	8 17 18.77	2.4223	20 47 19.0	11.121	12	10 10 1.26	2.2792	9 36 44.2	16.208
13	8 19 44.02	2.4193	20 36 7.5	11.262	13	10 12 17.94	2.2768	9 20 29.8	16.272
14	8 22 9.09	2.4164	20 24 47.6	11.400	14	10 14 34.48	2.2746	9 4 11.6	16.334
15	8 24 33.99	2.4134	20 13 19.5	11.538	15	10 16 50.89	2.2724	8 47 49.7	16.395
16	8 26 58.70	2.4103	20 1 43.1	11.675	16	10 19 7.17	2.2702	8 31 24.2	16.453
17	8 29 23.23	2.4073	19 49 58.5	11.812	17	10 21 23.32	2.2682	8 14 55.3	16.509
18	8 31 47.58	2.4042	19 38 5.7	11.947	18	10 23 39.35	2.2662	7 58 23.1	16.563
19	8 34 11.74	2.4011	19 26 4.9	12.079	19	10 25 55.26	2.2642	7 41 47.7	16.617
20	8 36 35.71	2.3979	19 13 56.2	12.210	20	10 28 11.06	2.2623	7 25 9.1	16.668
21	8 38 59.49	2.3948	19 1 39.7	12.340	21	10 30 26.74	2.2605	7 8 27.5	16.717
22	8 41 23.08	2.3916	18 49 15.4	12.469	22	10 32 42.32	2.2587	6 51 43.0	16.764
23	8 43 46.48	2.3883	N.18 36 43.4	12.597	23	10 34 57.79	2.2570	N. 6 34 55.8	16.809
	MONDAY 26.					WEDNESDAY 28.			
0	8 46 9.68	2.3851	N.18 24 3.7	12.724	0	10 37 13.16	2.2553	N. 6 18 5.9	16.852
1	8 48 32.69	2.3819	18 11 16.5	12.849	1	10 39 28.43	2.2537	6 1 13.5	16.893
2	8 50 55.51	2.3788	17 58 21.8	12.972	2	10 41 43.61	2.2522	5 44 18.7	16.933
3	8 53 18.14	2.3756	17 45 19.8	13.094	3	10 43 58.70	2.2507	5 27 21.5	16.972
4	8 55 40.58	2.3723	17 32 10.5	13.215	4	10 46 13.70	2.2493	5 10 22.1	17.007
5	8 58 2.82	2.3691	17 18 54.0	13.333	5	10 48 28.62	2.2480	4 53 20.7	17.039
6	9 0 24.87	2.3659	17 5 30.5	13.450	6	10 50 43.46	2.2468	4 36 17.4	17.070
7	9 2 46.73	2.3627	16 52 0.0	13.567	7	10 52 58.23	2.2456	4 19 12.3	17.100
8	9 5 8.39	2.3594	16 38 22.5	13.682	8	10 55 12.93	2.2444	4 2 5.4	17.128
9	9 7 29.86	2.3562	16 24 38.1	13.796	9	10 57 27.56	2.2433	3 44 56.9	17.154
10	9 9 51.14	2.3531	16 10 47.0	13.907	10	10 59 42.13	2.2424	3 27 46.9	17.177
11	9 12 12.23	2.3498	15 56 49.3	14.016	11	11 1 56.65	2.2415	3 10 35.6	17.199
12	9 14 33.12	2.3466	15 42 45.1	14.124	12	11 4 11.11	2.2406	2 53 23.0	17.219
13	9 16 53.82	2.3435	15 28 34.4	14.231	13	11 6 25.52	2.2398	2 36 9.3	17.237
14	9 19 14.34	2.3404	15 14 17.4	14.336	14	11 8 39.89	2.2391	2 18 54.6	17.253
15	9 21 34.67	2.3373	14 59 54.1	14.439	15	11 10 54.21	2.2384	2 1 39.0	17.267
16	9 23 54.81	2.3342	14 45 24.7	14.541	16	11 13 8.50	2.2379	1 44 22.6	17.278
17	9 26 14.77	2.3312	14 30 49.2	14.641	17	11 15 22.76	2.2374	1 27 5.6	17.288
18	9 28 34.55	2.3281	14 16 7.8	14.739	18	11 17 36.99	2.2369	1 9 48.1	17.296
19	9 30 54.14	2.3250	14 1 20.5	14.836	19	11 19 51.19	2.2366	0 52 30.1	17.302
20	9 33 13.55	2.3221	13 46 27.5	14.930	20	11 22 5.38	2.2363	0 35 11.8	17.306
21	9 35 32.79	2.3192	13 31 28.9	15.023	21	11 24 19.55	2.2361	0 17 53.4	17.307
22	9 37 51.85	2.3162	13 16 24.7	15.115	22	11 26 33.71	2.2359	N. 0 0 34.9	17.308
23	9 40 10.73	2.3132	13 1 15.1	15.204	23	11 28 47.86	2.2358	S. 0 16 43.6	17.307
24	9 42 29.43	2.3103	N.12 46 0.2	15.292	24	11 31 2.01	2.2358	S. 0 34 1.9	17.303

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 31 2.01	2.2358	S. 0 34 1.9	17.303
1	11 33 16.16	2.2359	0 51 19.9	17.297
2	11 35 30.32	2.2361	1 8 37.5	17.288
3	11 37 44.49	2.2363	1 25 54.5	17.278
4	11 39 58.68	2.2367	1 43 10.9	17.267
5	11 42 12.89	2.2370	2 0 26.6	17.254
6	11 44 27.12	2.2374	2 17 41.4	17.238
7	11 46 41.38	2.2379	2 34 55.2	17.221
8	11 48 55.67	2.2385	2 52 7.9	17.201
9	11 51 10.00	2.2392	3 9 19.3	17.179
10	11 53 24.37	2.2398	3 26 29.4	17.156
11	11 55 38.78	2.2406	3 43 38.0	17.131
12	11 57 53.24	2.2414	4 0 45.1	17.104
13	12 0 7.75	2.2423	4 17 50.5	17.075
14	12 2 22.32	2.2434	4 34 54.1	17.043
15	12 4 36.96	2.2445	4 51 55.7	17.010
16	12 6 51.66	2.2457	5 8 55.3	16.975
17	12 9 6.44	2.2469	5 25 52.7	16.938
18	12 11 21.29	2.2482	5 42 47.9	16.900
19	12 13 36.22	2.2495	5 59 40.7	16.859
20	12 15 51.23	2.2509	6 16 31.0	16.817
21	12 18 6.33	2.2524	6 33 18.7	16.772
22	12 20 21.52	2.2539	6 50 3.7	16.726
23	12 22 36.80	2.2555	S. 7 6 45.8	16.677

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 24 52.18	2.2572	S. 7 23 25.0	16.627
1	12 27 7.66	2.2589	7 40 1.1	16.576
2	12 29 23.25	2.2608	7 56 34.1	16.522
3	12 31 38.95	2.2627	8 13 3.8	16.467
4	12 33 54.77	2.2646	8 29 30.1	16.409
5	12 36 10.70	2.2665	8 45 52.9	16.350
6	12 38 26.75	2.2686	9 2 12.1	16.289
7	12 40 42.93	2.2707	9 18 27.6	16.226
8	12 42 59.24	2.2728	9 34 39.2	16.161
9	12 45 15.67	2.2750	9 50 46.9	16.094
10	12 47 32.24	2.2773	10 6 50.5	16.026
11	12 49 48.95	2.2797	10 22 50.0	15.957
12	12 52 5.81	2.2822	10 38 45.3	15.885
13	12 54 22.81	2.2846	10 54 36.2	15.811
14	12 56 39.96	2.2871	11 10 22.6	15.735
15	12 58 57.26	2.2897	11 26 4.4	15.658
16	13 1 14.72	2.2922	11 41 41.5	15.579
17	13 3 32.33	2.2948	11 57 13.9	15.498
18	13 5 50.10	2.2976	12 12 41.3	15.415
19	13 8 8.04	2.3003	12 28 3.7	15.332
20	13 10 26.14	2.3031	12 43 21.1	15.247
21	13 12 44.41	2.3059	12 58 33.3	15.159
22	13 15 2.85	2.3088	13 13 40.2	15.070
23	13 17 21.47	2.3117	13 28 41.7	14.979
24	13 19 40.26	2.3147	S. 13 43 37.7	14.887

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 19 40.26	2.3147	S. 13 43 37.7	14.887
1	13 21 59.23	2.3177	13 58 28.1	14.793
2	13 24 18.39	2.3208	14 13 12.8	14.697
3	13 26 37.73	2.3238	14 27 51.7	14.599
4	13 28 57.25	2.3269	14 42 24.7	14.500
5	13 31 16.96	2.3301	14 56 51.7	14.399
6	13 33 36.86	2.3332	15 11 12.6	14.297
7	13 35 56.95	2.3364	15 25 27.3	14.193
8	13 38 17.23	2.3397	15 39 35.8	14.088
9	13 40 37.71	2.3429	15 53 37.9	13.981
10	13 42 58.38	2.3462	16 7 33.5	13.873
11	13 45 19.25	2.3495	16 21 22.6	13.763
12	13 47 40.32	2.3528	16 35 5.1	13.652
13	13 50 1.59	2.3562	16 48 40.8	13.538
14	13 52 23.06	2.3595	17 2 9.7	13.424
15	13 54 44.73	2.3628	17 15 31.7	13.308
16	13 57 6.60	2.3662	17 28 46.7	13.191
17	13 59 28.68	2.3697	17 41 54.6	13.072
18	14 1 50.96	2.3730	17 54 55.3	12.952
19	14 4 13.44	2.3764	18 7 48.8	12.830
20	14 6 36.13	2.3798	18 20 34.9	12.707
21	14 8 59.02	2.3832	18 33 13.6	12.583
22	14 11 22.12	2.3867	18 45 44.8	12.457
23	14 13 45.42	2.3901	S. 18 58 8.4	12.330

SUNDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 16 8.93	2.3935	S. 19 10 24.4	12.202

PHASES OF THE MOON.

		d	h	m
☽	First Quarter, . .	5	1	19.3
○	Full Moon, . . .	12	12	16.1
☾	Last Quarter, . .	20	16	7.8
●	New Moon, . . .	27	17	59.4

		d	h
☾	Apogee, ...	16	14.9
☾	Perigee, ...	28	21.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	35° 30′ 11″	2416	37° 13′ 23″	2418	38° 56′ 32″	2422	40° 39′ 36″	2425
	Antares	E.	83 25 26	2125	81 35 5	2127	79 44 47	2130	77 54 33	2133
2	Sun	W.	49 13 30	2449	50 55 55	2455	52 38 11	2462	54 20 18	2469
	Antares	E.	68 44 51	2156	66 55 17	2161	65 5 51	2168	63 16 35	2174
3	Sun	W.	62 48 15	2509	64 29 16	2518	66 10 4	2527	67 50 40	2537
	Antares	E.	54 12 51	2212	52 24 41	2220	50 36 43	2229	48 48 58	2238
	Jupiter	E.	107 16 59	2174	105 27 53	2182	103 38 59	2191	101 50 18	2200
4	Sun	W.	76 10 15	2587	77 49 28	2598	79 28 26	2608	81 7 10	2619
	Antares	W.	39 53 37	2285	38 7 15	2294	36 21 7	2304	34 35 14	2315
	Jupiter	E.	92 50 16	2247	91 2 58	2256	89 15 54	2266	87 29 5	2277
	α Aquilæ	E.	94 16 0	2930	92 44 19	2937	91 12 47	2946	89 41 26	2956
5	Sun	W.	89 17 7	2674	90 54 22	2685	92 31 22	2697	94 8 6	2708
	Spica	W.	20 13 45	2408	21 57 8	2413	23 40 24	2419	25 23 32	2426
	Antares	E.	25 49 32	2366	24 5 9	2376	22 21 0	2387	20 37 6	2398
	Jupiter	E.	78 38 43	2327	76 53 23	2338	75 8 19	2348	73 23 30	2359
	α Aquilæ	E.	82 8 26	3025	80 38 44	3042	79 9 23	3060	77 40 25	3079
6	Sun	W.	102 8 4	2764	103 43 19	2775	105 18 19	2786	106 53 5	2798
	Spica	W.	33 56 33	2466	35 38 34	2475	37 20 22	2485	39 1 57	2494
	Jupiter	E.	64 43 10	2411	62 59 51	2421	61 16 46	2431	59 33 56	2442
	α Aquilæ	E.	70 21 58	3196	68 55 44	3224	67 30 3	3254	66 4 58	3285
	Fomalhaut	E.	93 50 20	2801	92 15 54	2811	90 41 41	2821	89 7 41	2832
7	Sun	W.	114 43 18	2852	116 16 39	2863	117 49 45	2874	119 22 37	2884
	Spica	W.	47 26 35	2541	49 6 51	2551	50 46 54	2560	52 26 44	2569
	Jupiter	E.	51 3 23	2492	49 21 58	2502	47 40 48	2512	45 59 52	2522
	α Aquilæ	E.	59 9 21	3474	57 48 28	3519	56 28 25	3566	55 9 16	3620
	Fomalhaut	E.	81 21 21	2893	79 48 53	2907	78 16 43	2922	76 44 52	2936
	α Pegasi	E.	103 3 47	2713	101 27 24	2720	99 51 11	2729	98 15 9	2738
8	Sun	W.	127 3 38	2936	128 35 11	2946	130 6 31	2957	131 37 38	2967
	Spica	W.	60 42 40	2616	62 21 13	2626	63 59 33	2635	65 37 41	2644
	Antares	W.	14 49 2	2610	16 27 44	2619	18 6 13	2629	19 44 29	2638
	Jupiter	E.	37 38 33	2571	35 58 58	2580	34 19 35	2589	32 40 25	2599
	Fomalhaut	E.	69 10 32	3022	67 40 46	3040	66 11 23	3060	64 42 25	3082
	α Pegasi	E.	90 17 53	2783	88 43 3	2792	87 8 25	2801	85 33 59	2811
	Saturn	E.	99 16 19	2624	97 37 56	2633	95 59 46	2642	94 21 48	2652
9	Spica	W.	73 45 15	2689	75 22 10	2698	76 58 53	2707	78 35 24	2716
	Antares	W.	27 52 44	2683	29 29 47	2692	31 6 37	2701	32 43 15	2710
	Fomalhaut	E.	57 24 30	3206	55 58 28	3235	54 33 0	3266	53 8 9	3300
	α Pegasi	E.	77 45 14	2866	76 12 12	2877	74 39 24	2889	73 6 51	2901
	Saturn	E.	86 15 4	2697	84 38 20	2706	83 1 48	2714	81 25 27	2723
10	Spica	W.	86 35 4	2759	88 10 26	2768	89 45 36	2776	91 20 35	2784
	Antares	W.	40 43 32	2753	42 19 1	2763	43 54 18	2771	45 29 24	2779
	Fomalhaut	E.	46 14 29	3506	44 54 12	3558	43 34 52	3614	42 16 33	3677
	α Pegasi	E.	65 28 8	2967	63 57 14	2981	62 26 38	2997	60 56 21	3012
	Saturn	E.	73 26 44	2769	71 51 35	2778	70 16 38	2787	68 41 53	2796

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	42 22 35	2429	44 5 29	2438	45 48 16	2438	47 30 57	2443
	Antares	E.	76 4 24	2137	74 14 21	2141	72 24 24	2145	70 34 34	2150
2	Sun	W.	56 2 15	2476	57 44 2	2484	59 25 38	2492	61 7 2	2500
	Antares	E.	61 27 28	2181	59 38 32	2188	57 49 47	2196	56 1 13	2204
3	Sun	W.	69 31 2	2546	71 11 11	2556	72 51 6	2566	74 30 48	2577
	Antares	E.	47 1 27	2247	45 14 9	2256	43 27 4	2265	41 40 13	2275
	Jupiter	E.	100 1 50	2209	98 13 36	2218	96 25 35	2227	94 37 48	2237
4	Sun	W.	82 45 39	2630	84 23 53	2640	86 1 53	2652	87 39 38	2663
	Antares	W.	32 49 36	2325	31 4 13	2335	29 19 4	2345	27 34 10	2356
	Jupiter	E.	85 42 31	2287	83 56 12	2297	82 10 8	2307	80 24 18	2317
	α Aquilæ	E.	88 10 18	2968	86 39 25	2981	85 8 48	2994	83 38 28	3009
5	Sun	W.	95 44 35	2719	97 20 49	2730	98 56 49	2741	100 32 34	2753
	Spica	W.	27 6 30	2433	28 49 18	2441	30 31 55	2449	32 14 20	2458
	Antares	E.	18 53 28	2408	17 10 5	2418	15 26 56	2429	13 44 3	2439
	Jupiter	E.	71 38 56	2369	69 54 37	2380	68 10 33	2390	66 26 44	2401
	α Aquilæ	E.	76 11 50	3100	74 43 40	3122	73 15 57	3146	71 48 43	3170
6	Sun	W.	108 27 36	2808	110 1 53	2820	111 35 55	2831	113 9 43	2841
	Spica	W.	40 43 19	2503	42 24 28	2512	44 5 24	2522	45 46 6	2532
	Jupiter	E.	57 51 21	2452	56 9 0	2462	54 26 54	2472	52 45 2	2482
	α Aquilæ	E.	64 40 29	3319	63 16 39	3353	61 53 29	3391	60 31 2	3431
	Fomalhaut	E.	87 33 55	2844	86 0 24	2855	84 27 7	2867	82 54 6	2880
7	Sun	W.	120 55 16	2895	122 27 41	2905	123 59 53	2916	125 31 52	2926
	Spica	W.	54 6 21	2579	55 45 45	2588	57 24 56	2598	59 3 54	2607
	Jupiter	E.	44 19 9	2532	42 38 40	2541	40 58 24	2551	39 18 22	2561
	α Aquilæ	E.	53 51 3	3677	52 33 51	3737	51 17 43	3802	50 2 43	3872
	Fomalhaut	E.	75 13 19	2952	73 42 6	2968	72 11 13	2985	70 40 41	3003
	α Pegasi	E.	96 39 19	2746	95 3 40	2754	93 28 12	2763	91 52 56	2773
8	Sun	W.	133 8 32	2977	134 39 13	2987	136 9 42	2997	137 39 59	3007
	Spica	W.	67 15 36	2653	68 53 19	2662	70 30 50	2672	72 8 8	2680
	Antares	W.	21 22 33	2647	23 0 24	2656	24 38 3	2665	26 15 30	2675
	Jupiter	E.	31 1 28	2608	29 22 44	2617	27 44 12	2626	26 5 53	2635
	Fomalhaut	E.	63 13 53	3104	61 45 48	3128	60 18 12	3152	58 51 5	3178
	α Pegasi	E.	83 59 46	2822	82 25 47	2833	80 52 2	2844	79 18 31	2855
	Saturn	E.	92 44 3	2660	91 6 30	2669	89 29 9	2678	87 52 0	2688
9	Spica	W.	80 11 43	2724	81 47 51	2733	83 23 47	2742	84 59 31	2750
	Antares	W.	34 19 42	2719	35 55 57	2728	37 32 0	2736	39 7 52	2745
	Fomalhaut	E.	51 43 57	3336	50 20 27	3373	48 57 40	3414	47 35 39	3459
	α Pegasi	E.	71 34 34	2914	70 2 33	2927	68 30 48	2940	66 59 20	2953
	Saturn	E.	79 49 18	2732	78 13 21	2742	76 37 37	2751	75 2 5	2760
10	Spica	W.	92 55 24	2792	94 30 2	2801	96 4 29	2810	97 38 44	2818
	Antares	W.	47 4 20	2788	48 39 4	2795	50 13 38	2804	51 48 1	2812
	Fomalhaut	E.	40 59 21	3745	39 43 21	3819	38 28 38	3901	37 15 19	3992
	α Pegasi	E.	59 26 23	3028	57 56 45	3045	56 27 28	3063	54 58 33	3081
	Saturn	E.	67 7 20	2805	65 32 58	2814	63 58 48	2823	62 24 50	2832

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11	Spica	W.	99° 12′ 48″	2826	100° 46′ 42″	2835	102° 20′ 25″	2842	103° 53′ 58″	2851
	Antares	W.	53 22 13	2821	54 56 14	2828	56 30 5	2837	58 3 45	2845
	α Pegasi	E.	53 30 0	3101	52 1 51	3121	50 34 7	3143	49 6 49	3165
	Saturn	E.	60 51 4	2842	59 17 30	2851	57 44 8	2860	56 10 58	2870
	α Arietis	E.	94 40 51	2835	93 7 9	2844	91 33 38	2852	90 0 17	2859
12	Antares	W.	65 49 30	2884	67 22 9	2892	68 54 38	2900	70 26 57	2907
	α Pegasi	E.	41 57 45	3306	40 33 40	3341	39 10 16	3379	37 47 36	3421
	Saturn	E.	48 28 14	2919	46 56 19	2929	45 24 37	2939	43 53 8	2950
	α Arietis	E.	82 16 6	2899	80 43 46	2908	79 11 37	2916	77 39 38	2923
13	Antares	W.	78 6 10	2944	79 37 33	2951	81 8 47	2958	82 39 52	2965
	Jupiter	W.	26 14 11	2905	27 46 24	2912	29 18 27	2919	30 50 22	2926
	Saturn	E.	36 19 13	3009	34 49 12	3022	33 19 27	3037	31 50 0	3052
	α Arietis	E.	70 2 7	2961	68 31 5	2969	67 0 13	2976	65 29 30	2983
	Aldebaran	E.	102 6 33	3018	100 36 42	3023	99 6 58	3030	97 37 22	3036
14	Antares	W.	90 13 14	2997	91 43 31	3003	93 13 40	3009	94 43 42	3015
	α Aquilæ	W.	45 9 32	4501	46 13 23	4431	47 18 16	4369	48 24 5	4311
	Jupiter	W.	38 27 51	2958	39 58 57	2964	41 29 55	2969	43 0 46	2975
	α Arietis	E.	57 58 8	3018	56 28 18	3025	54 58 36	3031	53 29 2	3038
	Aldebaran	E.	90 11 18	3067	88 42 28	3073	87 13 46	3079	85 45 11	3085
15	Antares	W.	102 12 10	3039	103 41 34	3044	105 10 52	3048	106 40 5	3052
	α Aquilæ	W.	54 4 59	4093	55 15 7	4060	56 25 48	4030	57 36 58	4002
	Jupiter	W.	50 33 20	3001	52 3 32	3005	53 33 39	3009	55 3 40	3013
	α Arietis	E.	46 3 11	3069	44 34 24	3075	43 5 44	3081	41 37 11	3087
	Aldebaran	E.	78 24 1	3113	76 56 7	3119	75 28 20	3124	74 0 39	3129
16	α Aquilæ	W.	63 39 7	3891	64 52 36	3873	66 6 23	3856	67 20 27	3841
	Jupiter	W.	62 32 40	3029	64 2 17	3031	65 31 51	3034	67 1 22	3036
	Fomalhaut	W.	38 29 30	4092	39 39 39	4032	40 50 47	3978	42 2 48	3929
	α Arietis	E.	34 16 17	3117	32 48 28	3124	31 20 47	3130	29 53 14	3137
	Aldebaran	E.	66 43 44	3152	65 16 37	3157	63 49 36	3161	62 22 40	3165
	Pollux	E.	108 54 44	3084	107 26 15	3086	105 57 48	3088	104 29 24	3090
17	Jupiter	W.	74 28 32	3039	75 57 56	3039	77 27 21	3039	78 56 46	3037
	α Aquilæ	W.	73 34 21	3780	74 49 44	3769	76 5 18	3760	77 21 2	3750
	Fomalhaut	W.	48 13 56	3741	49 30 0	3712	50 46 34	3685	52 3 37	3661
	α Pegasi	W.	26 3 34	4120	27 13 16	4021	28 24 35	3934	29 37 20	3857
	Aldebaran	E.	55 9 11	3184	53 42 43	3188	52 16 19	3192	50 50 0	3195
	Pollux	E.	97 7 43	3092	95 39 24	3091	94 11 4	3091	92 42 44	3090
	Venus	E.	102 43 57	3544	101 24 21	3544	100 4 45	3543	98 45 8	3542
	Sun	E.	130 26 41	3446	129 5 16	3445	127 43 50	3445	126 22 24	3443
18	Jupiter	W.	86 24 23	3026	87 54 3	3022	89 23 48	3019	90 53 37	3015
	α Aquilæ	W.	83 41 56	3712	84 58 30	3706	86 15 11	3700	87 31 58	3694
	Fomalhaut	W.	58 35 4	3555	59 54 28	3536	61 14 12	3519	62 34 15	3503
	α Pegasi	W.	35 57 55	3591	37 16 39	3553	38 36 5	3517	39 56 10	3486
	Saturn	W.	24 51 31	3195	26 17 46	3177	27 44 23	3160	29 11 20	3144
	Aldebaran	E.	43 39 34	3217	42 13 45	3223	40 48 3	3229	39 22 28	3236
	Pollux	E.	85 20 31	3078	83 51 55	3075	82 23 15	3072	80 54 31	3067
	Venus	E.	92 6 32	3528	90 46 39	3525	89 26 42	3520	88 6 40	3515

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11	Spica	W.	105° 27′ 20″	2859	107° 0′ 32″	2867	108° 33′ 33″	2875	110° 6′ 24″	2883
	Antares	W.	59 37 14	2853	61 10 33	2861	62 43 42	2869	64 16 41	2876
	α Pegasi	E.	47 39 58	3190	46 13 37	3215	44 47 46	3243	43 22 28	3273
	Saturn	E.	54 38 1	2880	53 5 16	2889	51 32 43	2898	50 0 22	2909
	α Arietis	E.	88 27 6	2868	86 54 6	2876	85 21 16	2883	83 48 36	2891
12	Antares	W.	71 59 7	2915	73 31 7	2923	75 2 57	2930	76 34 38	2937
	α Pegasi	E.	36 25 43	3468	35 4 43	3519	33 44 40	3576	32 25 40	3639
	Saturn	E.	42 21 52	2961	40 50 50	2973	39 20 3	2984	37 49 30	2997
	α Arietis	E.	76 7 48	2931	74 36 8	2939	73 4 88	2946	71 33 18	2954
13	Antares	W.	84 10 49	2971	85 41 38	2978	87 12 18	2985	88 42 50	2991
	Jupiter	W.	32 22 8	2932	33 53 46	2939	35 25 16	2945	36 56 38	2952
	Saturn	E.	30 20 52	3069	28 52 4	3087	27 23 39	3107	25 55 38	3129
	α Arietis	E.	63 58 56	2990	62 28 31	2997	60 58 15	3004	59 28 7	3011
	Aldebaran	E.	96 7 54	3043	94 38 34	3048	93 9 21	3055	91 40 16	3060
14	Antares	W.	96 13 36	3020	97 43 24	3026	99 13 5	3030	100 42 40	3034
	α Aquilæ	W.	49 30 47	4260	50 38 17	4213	51 46 31	4169	52 55 26	4130
	Jupiter	W.	44 31 30	2981	46 2 7	2985	47 32 38	2991	49 3 2	2996
	α Arietis	E.	51 59 36	3044	50 30 18	3051	49 1 8	3057	47 32 6	3063
	Aldebaran	E.	84 16 43	3091	82 48 22	3096	81 20 8	3102	79 52 1	3108
15	Antares	W.	108 9 13	3056	109 38 17	3060	111 7 16	3063	112 36 11	3066
	α Aquilæ	W.	58 48 36	3976	60 0 39	3952	61 13 6	3929	62 25 56	3909
	Jupiter	W.	56 33 37	3017	58 3 29	3020	59 33 17	3024	61 3 0	3026
	α Arietis	E.	40 8 46	3093	38 40 28	3099	37 12 17	3105	35 44 13	3111
	Aldebaran	E.	72 33 5	3133	71 5 36	3138	69 38 13	3143	68 10 56	3148
16	α Aquilæ	W.	68 34 47	3827	69 49 21	3814	71 4 9	3802	72 19 9	3791
	Jupiter	W.	68 30 50	3037	70 0 17	3038	71 29 43	3039	72 59 8	3039
	Fomalhaut	W	43 15 38	3885	44 29 13	3844	45 43 30	3807	46 58 25	3772
	α Arietis	E.	28 25 49	3144	26 58 33	3153	25 31 28	3163	24 4 34	3174
	Aldebaran	E.	60 55 49	3169	59 29 3	3173	58 2 21	3177	56 35 44	3180
	Pollux	E.	103 1 2	3091	101 32 41	3091	100 4 21	3092	98 36 2	3092
17	Jupiter	W.	80 26 13	3035	81 55 42	3034	83 25 13	3032	84 54 46	3029
	α Aquilæ	W.	78 36 56	3742	79 52 59	3734	81 9 10	3727	82 25 29	3719
	Fomalhaut	W.	53 21 6	3636	54 39 1	3614	55 57 20	3594	57 16 1	3574
	α Pegasi	W.	30 51 23	3791	32 6 35	3732	33 22 48	3680	34 39 56	3633
	Aldebaran	E.	49 23 45	3199	47 57 35	3203	46 31 29	3208	45 5 29	3212
	Pollux	E.	91 14 22	3088	89 45 58	3087	88 17 32	3084	86 49 3	3082
	Venus	E.	97 25 30	3540	96 5 50	3537	94 46 7	3535	93 26 21	3532
	Sun	E.	125 0 56	3442	123 39 27	3439	122 17 55	3437	120 56 20	3434
18	Jupiter	W.	92 23 31	3010	93 53 31	3005	95 23 38	3000	96 53 51	2993
	α Aquilæ	W.	88 48 51	3689	90 5 50	3683	91 22 55	3678	92 40 5	3674
	Fomalhaut	W.	63 54 36	3487	65 15 15	3471	66 36 11	3455	67 57 25	3441
	α Pegasi	W.	41 16 50	3456	42 38 3	3428	43 59 48	3402	45 22 2	3378
	Saturn	W.	30 38 36	3130	32 6 9	3116	33 33 59	3104	35 2 4	3091
	Aldebaran	E.	37 57 1	3243	36 31 43	3253	35 6 36	3264	33 41 42	3276
	Pollux	E.	79 25 41	3062	77 56 45	3057	76 27 43	3052	74 58 35	3046
	Venus	E.	86 46 32	3510	85 26 19	3504	84 5 59	3497	82 45 32	3491

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18	Sun	E.	119° 34′ 42″	3431	118° 13′ 0″	3427	116° 51′ 14″	3423	115° 29′ 23″	3418
19	Jupiter	W.	98 24 12	2987	99 54 41	2981	101 25 18	2973	102 56 5	2965
	Fomalhaut	W.	69 18 55	3426	70 40 42	3412	72 2 45	3398	73 25 4	3384
	α Pegasi	W.	46 44 44	3355	48 7 52	3332	49 31 26	3311	50 55 25	3291
	Saturn	W.	36 30 24	3079	37 58 59	3068	39 27 48	3056	40 56 52	3043
	Pollux	E.	73 29 19	3040	71 59 56	3033	70 30 24	3026	69 0 43	3018
	Venus	E.	81 24 58	3483	80 4 15	3476	78 43 24	3468	77 22 24	3459
	Sun	E.	108 38 38	3387	107 16 7	3379	105 53 27	3372	104 30 38	3364
20	Fomalhaut	W.	80 20 34	3317	81 44 26	3303	83 8 34	3290	84 32 57	3276
	α Pegasi	W.	58 1 4	3196	59 27 18	3178	60 53 53	3160	62 20 50	3143
	Saturn	W.	48 25 53	2983	49 56 27	2970	51 27 17	2958	52 58 23	2945
	Pollux	E.	61 29 49	2974	59 59 4	2965	58 28 7	2954	56 56 57	2944
	Venus	E.	70 34 44	3408	69 12 36	3396	67 50 15	3384	66 27 40	3372
	Sun	E.	97 33 58	3313	96 10 2	3302	94 45 53	3290	93 21 30	3278
21	Fomalhaut	W.	91 38 45	3212	93 4 40	3198	94 30 51	3186	95 57 17	3173
	α Pegasi	W.	69 40 52	3056	71 9 56	3038	72 39 22	3021	74 9 9	3003
	Saturn	W.	60 38 8	2875	62 10 59	2860	63 44 9	2845	65 17 39	2829
	α Arietis	W.	26 16 11	2932	27 47 49	2911	29 19 54	2891	30 52 24	2871
	Pollux	E.	49 17 37	2886	47 45 0	2873	46 12 6	2860	44 38 56	2848
	Venus	E.	59 30 58	3301	58 6 48	3287	56 42 21	3270	55 17 35	3254
	Sun	E.	86 15 50	3209	84 49 52	3195	83 23 37	3180	81 57 4	3164
22	α Pegasi	W.	81 43 33	2915	83 15 33	2898	84 47 55	2880	86 20 40	2862
	Saturn	W.	73 10 15	2749	74 45 50	2732	76 21 48	2714	77 58 9	2697
	α Arietis	W.	38 41 11	2775	40 16 11	2757	41 51 35	2738	43 27 24	2719
	Pollux	E.	36 48 54	2782	35 14 2	2769	33 38 53	2756	32 3 27	2744
	Venus	E.	48 8 51	3169	46 42 5	3150	45 14 56	3132	43 47 25	3113
	Sun	E.	74 39 26	3080	73 10 52	3063	71 41 57	3044	70 12 39	3026
23	Saturn	W.	86 5 46	2607	87 44 31	2590	89 23 40	2572	91 3 14	2553
	α Arietis	W.	51 32 51	2624	53 11 13	2604	54 50 2	2585	56 29 17	2566
	Venus	E.	36 24 0	3016	34 54 7	2996	33 23 49	2976	31 53 6	2955
	Sun	E.	62 40 23	2931	61 8 44	2912	59 36 40	2892	58 4 11	2873
24	α Arietis	W.	64 52 10	2470	66 34 5	2452	68 16 26	2433	69 59 14	2414
	Aldebaran	W.	33 50 31	2677	35 27 42	2640	37 5 43	2606	38 44 30	2573
	Sun	E.	50 15 26	2774	48 40 24	2754	47 4 56	2735	45 29 2	2715
25	α Arietis	W.	78 39 51	2324	80 25 16	2307	82 11 6	2289	83 57 21	2272
	Aldebaran	W.	47 8 47	2436	48 51 30	2412	50 34 47	2389	52 18 37	2368
	Sun	E.	37 23 9	2621	35 44 43	2604	34 5 53	2587	32 26 40	2569
29	Sun	W.	17 54 53	2325	19 40 16	2324	21 25 41	2324	23 11 6	2324
	Antares	E.	74 17 41	2015	72 24 30	2016	70 31 21	2019	68 38 16	2022
30	Sun	W.	31 57 16	2346	33 42 9	2353	35 26 51	2361	37 11 22	2369
	Antares	E.	59 14 29	2048	57 22 10	2055	55 30 2	2063	53 38 6	2071
31	Sun	W.	45 50 39	2420	47 33 45	2432	49 16 34	2445	50 59 5	2457
	Antares	E.	44 21 52	2120	42 31 24	2132	40 41 14	2143	38 51 21	2155

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18	Sun	E.	114° 7′ 27″	3413	112° 45′ 25″	3407	111° 23′ 16″	3401	110° 1′ 1″	3394
19	Jupiter	W.	104 27 1	2958	105 58 7	2949	107 29 24	2940	109 0 52	2930
	Fomalhaut	W.	74 47 39	3370	76 10 30	3357	77 33 36	3344	78 56 57	3330
	α Pegasi	W.	52 19 47	3271	53 44 32	3252	55 9 40	3232	56 35 11	3214
	Saturn	W.	42 26 11	3032	43 55 44	3020	45 25 32	3008	46 55 35	2996
	Pollux	E.	67 30 53	3010	66 0 53	3002	64 30 43	2993	63 0 22	2984
	Venus	E.	76 1 14	3450	74 39 54	3439	73 18 22	3430	71 56 39	3419
	Sun	E.	103 7 40	3354	101 44 31	3345	100 21 12	3335	98 57 41	3325
20	Fomalhaut	W.	85 57 36	3264	87 22 30	3250	88 47 40	3237	90 13 5	3225
	α Pegasi	W.	63 48 8	3125	65 15 47	3107	66 43 48	3091	68 12 9	3073
	Saturn	W.	54 29 45	2931	56 1 24	2917	57 33 21	2904	59 5 35	2889
	Pollux	E.	55 25 34	2933	53 53 57	2921	52 22 5	2910	50 49 59	2898
	Venus	E.	65 4 51	3358	63 41 47	3345	62 18 27	3331	60 54 51	3316
	Sun	E.	91 56 53	3265	90 32 1	3252	89 6 53	3239	87 41 30	3225
21	Fomalhaut	W.	97 23 58	3161	98 50 54	3149	100 18 4	3138	101 45 28	3125
	α Pegasi	W.	75 39 18	2985	77 9 49	2969	78 40 41	2950	80 11 56	2933
	Saturn	W.	66 51 29	2814	68 25 39	2798	70 0 10	2782	71 35 2	2766
	α Arietis	W.	32 25 20	2852	33 58 41	2833	35 32 26	2814	37 6 36	2795
	Pollux	E.	43 5 30	2835	41 31 47	2821	39 57 46	2808	38 23 29	2795
	Venus	E.	53 52 30	3237	52 27 5	3221	51 1 21	3204	49 35 16	3187
	Sun	E.	80 30 12	3148	79 3 1	3132	77 35 30	3115	76 7 39	3097
22	α Pegasi	W.	87 53 47	2845	89 27 17	2827	91 1 10	2809	92 35 26	2793
	Saturn	W.	79 34 53	2680	81 12 0	2662	82 49 31	2644	84 27 26	2626
	α Arietis	W.	45 3 39	2700	46 40 19	2681	48 17 24	2662	49 54 55	2643
	Pollux	E.	30 27 45	2732	28 51 48	2721	27 15 36	2711	25 39 11	2703
	Venus	E.	42 19 31	3094	40 51 14	3074	39 22 33	3055	37 53 28	3036
	Sun	E.	68 42 59	3008	67 12 56	2989	65 42 29	2969	64 11 38	2950
23	Saturn	W.	92 43 14	2535	94 23 39	2516	96 4 30	2498	97 45 46	2480
	α Arietis	W.	58 8 58	2547	59 49 6	2527	61 29 41	2509	63 10 42	2489
	Venus	E.	30 21 57	2935	28 50 23	2915	27 18 23	2894	25 45 57	2874
	Sun	E.	56 31 17	2853	54 57 58	2833	53 24 13	2813	51 50 2	2794
24	α Arietis	W.	71 42 29	2396	73 26 10	2377	75 10 18	2359	76 54 52	2342
	Aldebaran	W.	40 24 2	2543	42 4 15	2515	43 45 8	2487	45 26 39	2461
	Sun	E.	43 52 42	2696	42 15 57	2677	40 38 46	2658	39 1 10	2640
25	α Arietis	W.	85 44 1	2256	87 31 5	2241	89 18 32	2225	91 6 22	2210
	Aldebaran	W.	54 2 58	2346	55 47 50	2326	57 33 11	2307	59 19 0	2288
	Sun	E.	30 47 3	2553	29 7 3	2538	27 26 42	2522	25 46 0	2508
29	Sun	W.	24 56 30	2327	26 41 50	2330	28 27 6	2335	30 12 15	2340
	Antares	E.	66 45 16	2026	64 52 22	2031	62 59 36	2036	61 6 58	2042
30	Sun	W.	38 55 41	2378	40 39 47	2388	42 23 39	2398	44 7 17	2409
	Antares	E.	51 46 22	2080	49 54 52	2090	48 3 37	2099	46 12 37	2109
31	Sun	W.	52 41 19	2470	54 23 14	2484	56 4 50	2498	57 46 6	2512
	Antares	E.	37 1 46	2168	35 12 30	2180	33 23 33	2194	31 34 56	2207

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	10 41 57.26	9.072	N. 8 14 45.9	−54.51	15 53.70	64.41	0 6.56	0.782
Mon.	2	10 45 34.84	9.060	7 52 53.7	54.83	15 53.94	64.36	0 25.48	0.794
Tues.	3	10 49 12.14	9.048	7 30 54.0	55.14	15 54.18	64.32	0 44.68	0.806
Wed.	4	10 52 49.16	9.037	7 8 47.1	55.43	15 54.42	64.28	1 4.16	0.817
Thur.	5	10 56 25.92	9.027	6 46 33.3	55.71	15 54.67	64.25	1 23.90	0.827
Frid.	6	11 0 2.43	9.017	6 24 13.0	55.98	15 54.92	64.22	1 43.90	0.837
Sat.	7	11 3 38.71	9.008	6 1 46.5	56.23	15 55.17	64.19	2 4.11	0.846
Sun.	8	11 7 14.79	9.000	5 39 14.1	56.47	15 55.42	64.16	2 24.53	0.854
Mon.	9	11 10 50.70	8.993	5 16 35.9	56.70	15 55.67	64.14	2 45.13	0.862
Tues.	10	11 14 26.45	8.986	4 53 52.5	56.92	15 55.92	64.12	3 5.88	0.868
Wed.	11	11 18 2.05	8.981	4 31 4.1	57.11	15 56.17	64.11	3 26.76	0.873
Thur.	12	11 21 37.54	8.977	4 8 11.0	57.30	15 56.42	64.09	3 47.76	0.877
Frid.	13	11 25 12.94	8.974	3 45 13.4	57.48	15 56.68	64.08	4 8.85	0.881
Sat.	14	11 28 48.27	8.972	3 22 11.9	57.64	15 56.93	64.07	4 30.03	0.883
Sun.	15	11 32 23.55	8.970	2 59 6.7	57.79	15 57.19	64.07	4 51.25	0.885
Mon.	16	11 35 58.81	8.970	2 35 57.8	57.92	15 57.44	64.07	5 12.47	0.885
Tues.	17	11 39 34.08	8.970	2 12 45.7	58.05	15 57.70	64.06	5 33.70	0.885
Wed.	18	11 43 9.36	8.971	1 49 30.8	58.17	15 57.96	64.06	5 51.92	0.883
Thur.	19	11 46 44.68	8.973	1 26 13.3	58.27	15 58.22	64.06	6 16.09	0.881
Frid.	20	11 50 20.06	8.976	1 2 53.6	58.35	15 58.48	64.07	6 37.19	0.878
Sat.	21	11 53 55.54	8.980	0 39 32.1	58.42	15 58.74	64.08	6 58.21	0.874
Sun.	22	11 57 31.12	8.985	N. 0 16 9.1	58.47	15 59.00	64.09	7 19.14	0.869
Mon.	23	12 1 6.82	8.990	S. 0 7 14.8	58.51	15 59.27	64.11	7 39.94	0.864
Tues.	24	12 4 42.65	8.996	0 30 39.5	58.53	15 59.54	64.13	8 0.61	0.858
Wed.	25	12 8 18.65	9.003	0 54 4.6	58.54	15 59.81	64.15	8 21.11	0.851
Thur.	26	12 11 54.81	9.011	1 17 29.9	58.53	16 0.08	64.17	8 41.45	0.843
Frid.	27	12 15 31.16	9.019	1 40 54.8	58.51	16 0.36	64.20	9 1.58	0.835
Sat.	28	12 19 7.72	9.028	2 4 18.9	58.47	16 0.63	64.23	9 21.51	0.826
Sun.	29	12 22 44.51	9.038	2 27 41.8	58.42	16 0.91	64.27	9 41.23	0.816
Mon.	30	12 26 21.54	9.048	2 51 3.3	58.35	16 1.19	64.31	10 0.71	0.805
Tues.	31	12 29 58.84	9.059	S. 3 14 22.9	−58.27	16 1.47	64.36	10 19.92	0.794

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

prefixed to the hourly change of declination indicates that the north declinations are decreasing and that the south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	10 41 57.27	9.074	N. 8 14 45.9	-54.52	0 6.56	0.782	10 42 3.83
Mon.	2	10 45 34.90	9.062	7 52 53.4	54.84	0 25.49	0.794	10 46 0.39
Tues.	3	10 49 12.25	9.050	7 30 53.3	55.15	0 44.70	0.806	10 49 56.94
Wed.	4	10 52 49.32	9.039	7 8 46.1	55.44	1 4.18	0.817	10 53 53.50
Thur.	5	10 56 26.13	9.029	6 46 32.0	55.72	1 23.92	0.827	10 57 50.05
Frid.	6	11 0 2.69	9.019	6 24 11.4	55.99	1 43.92	0.837	11 1 46.61
Sat.	7	11 3 39.02	9.010	6 1 44.6	56.24	2 4.14	0.846	11 5 43.16
Sun.	8	11 7 15.15	9.002	5 39 11.8	56.48	2 24.56	0.854	11 9 39.72
Mon.	9	11 10 51.11	8.995	5 16 33.3	56.71	2 45.16	0.862	11 13 36.27
Tues.	10	11 14 26.91	8.988	4 53 49.6	56.93	3 5.92	0.868	11 17 32.83
Wed.	11	11 18 2.56	8.983	4 31 0.8	57.13	3 26.81	0.873	11 21 29.37
Thur.	12	11 21 38.10	8.979	4 8 7.4	57.32	3 47.82	0.877	11 25 25.93
Frid.	13	11 25 13.56	8.976	3 45 9.5	57.50	4 8.92	0.881	11 29 22.48
Sat.	14	11 28 48.94	8.974	3 22 7.6	57.66	4 30.10	0.883	11 33 19.04
Sun.	15	11 32 24.27	8.972	2 59 2.0	57.81	4 51.32	0.885	11 37 15.59
Mon.	16	11 35 59.59	8.972	2 35 52.8	57.94	5 12.55	0.885	11 41 12.14
Tues.	17	11 39 34.91	8.972	2 12 40.3	58.07	5 33.78	0.885	11 45 8.69
Wed.	18	11 43 10.24	8.973	1 49 25.0	58.19	5 55.01	0.883	11 49 5.25
Thur.	19	11 46 45.61	8.975	1 26 7.2	58.29	6 16.19	0.881	11 53 1.80
Frid.	20	11 50 21.05	8.978	1 2 47.2	58.37	6 37.30	0.878	11 56 58.35
Sat.	21	11 53 56.58	8.982	0 39 25.3	58.44	6 58.32	0.874	12 0 54.90
Sun.	22	11 57 32.21	8.987	N. 0 16 2.0	58.49	7 19.25	0.869	12 4 51.46
Mon.	23	12 1 7.96	8.992	S. 0 7 22.3	58.53	7 40.05	0.864	12 8 48.01
Tues.	24	12 4 43.85	8.998	0 30 47.3	58.55	8 0.72	0.858	12 12 44.57
Wed.	25	12 8 19.90	9.005	0 54 12.8	58.56	8 21.23	0.851	12 16 41.12
Thur.	26	12 11 56.11	9.013	1 17 38.4	58.55	8 41.57	0.843	12 20 37.68
Frid.	27	12 15 32.52	9.021	1 41 3.6	58.53	9 1.71	0.835	12 24 34.23
Sat.	28	12 19 9.14	9.030	2 4 28.0	58.49	9 21.64	0.826	12 28 30.78
Sun.	29	12 22 45.97	9.040	2 27 51.2	58.44	9 41.36	0.816	12 32 27.33
Mon.	30	12 26 23.05	9.050	2 51 13.0	58.37	10 0.84	0.805	12 36 23.89
Tues.	31	12 30 0.40	9.061	S. 3 14 33.0	-58.28	10 20.05	0.794	12 40 20.44

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the north declinations are decreasing and that the south declinations are increasing.

Diff. for 1 hour.
$+9^{s}.8565$
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	244	158 53 9.3	52 22.2	145.33	−0.38	0.0037627	−44.7	13 15 45.44
2	245	159 51 17.9	50 30.7	145.39	0.39	.0036546	45.3	13 11 49.53
3	246	160 49 28.0	48 40.6	145.45	0.36	.0035451	45.8	13 7 53.62
4	247	161 47 39.5	46 52.0	145.51	0.31	.0034344	46.3	13 3 57.72
5	248	162 45 52.5	45 4.9	145.57	0.23	.0033227	46.7	13 0 1.81
6	249	163 44 6.9	43 19.2	145.63	0.13	.0032101	47.0	12 56 5.90
7	250	164 42 22.8	41 35.0	145.69	−0.01	.0030968	47.3	12 52 9.99
8	251	165 40 40.2	39 52.2	145.76	+0.12	.0029829	47.5	12 48 14.08
9	252	166 38 59.2	38 11.1	145.83	0.25	.0028684	47.7	12 44 18.17
10	253	167 37 19.9	36 31.7	145.90	0.39	.0027536	47.9	12 40 22.26
11	254	168 35 42.3	34 54.0	145.97	0.50	.0026386	48.0	12 36 26.35
12	255	169 34 6.5	33 18.1	146.05	0.59	.0025233	48.1	12 32 30.46
13	256	170 32 32.7	31 44.2	146.13	0.67	.0024078	48.2	12 28 34.55
14	257	171 31 1.0	30 12.4	146.22	0.72	.0022921	48.2	12 24 38.64
15	258	172 29 31.3	28 42.6	146.30	0.74	.0021762	48.3	12 20 42.73
16	259	173 28 3.6	27 14.8	146.39	0.73	.0020601	48.4	12 16 46.83
17	260	174 26 38.1	25 49.2	146.48	0.69	.0019436	48.6	12 12 50.92
18	261	175 25 14.8	24 25.7	146.57	0.62	.0018267	48.8	12 8 55.01
19	262	176 23 53.7	23 4.5	146.67	0.51	.0017093	49.0	12 4 59.11
20	263	177 22 34.9	21 45.6	146.76	0.38	.0015913	49.3	12 1 3.20
21	264	178 21 18.3	20 28.9	146.85	0.25	.0014726	49.6	11 57 7.29
22	265	179 20 3.9	19 14.4	146.94	+0.12	.0013530	50.0	11 53 11.38
23	266	180 18 51.6	18 2.0	147.03	−0.01	.0012325	50.4	11 49 15.47
24	267	181 17 41.5	16 51.8	147.12	0.15	.0011112	50.7	11 45 19.57
25	268	182 16 33.6	15 43.8	147.21	0.26	.0009890	51.1	11 41 23.66
26	269	183 15 27.7	14 37.8	147.30	0.35	.0008659	51.5	11 37 27.75
27	270	184 14 23.8	13 33.8	147.38	0.42	.0007420	51.8	11 33 31.84
28	271	185 13 22.0	12 31.9	147.46	0.46	.0006172	52.2	11 29 35.94
29	272	186 12 22.1	11 31.9	147.54	0.47	.0004916	52.5	11 25 40.03
30	273	187 11 24.1	10 33.8	147.62	0.45	.0003652	52.8	11 21 44.12
31	274	188 10 27.9	9 37.5	147.69	−0.40	0.0002381	−53.1	11 17 48.22

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.0.

Diff. for 1 hour.
—9s.8296
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 19.1	16 13.2	59 46.8	-1.78	59 24.9	-1.89	3 42.4	2.33	4.3
2	16 6.8	16 0.4	59 1.7	1.96	58 38.1	1.99	4 39.3	2.40	5.3
3	15 53.9	15 47.5	58 14.2	1.98	57 50.7	1.94	5 37.6	2.43	6.3
4	15 41.2	15 35.2	57 27.7	1.88	57 5.6	1.80	6 35.9	2.40	7.3
5	15 29.5	15 24.0	56 44.6	1.71	56 24.7	1.61	7 32.5	2.29	8.3
6	15 19.0	15 14.2	56 6.0	1.50	55 48.6	1.39	8 25.9	2.14	9.3
7	15 9.9	15 5.8	55 32.6	1.28	55 17.8	1.18	9 15.5	1.99	10.3
8	15 2.2	14 58.9	55 4.3	1.07	54 52.2	0.96	10 1.5	1.85	11.3
9	14 55.9	14 53.3	54 41.3	0.86	54 31.6	0.76	10 44.5	1.74	12.3
10	14 50.9	14 49.0	54 23.1	0.66	54 15.8	0.56	11 25.3	1.67	13.3
11	14 47.3	14 46.0	54 9.7	0.46	54 4.8	0.36	12 5.0	1.64	14.3
12	14 45.0	14 44.4	54 1.2	0.25	53 58.9	-0.14	12 44.4	1.65	15.3
13	14 44.1	14 44.2	53 58.0	-0.02	53 58.5	+0.11	13 24.6	1.70	16.3
14	14 44.8	14 45.9	54 0.6	+0.25	54 4.5	0.40	14 6.4	1.79	17.3
15	14 47.4	14 49.5	54 10.1	0.55	54 17.7	0.71	14 50.6	1.91	18.3
16	14 52.1	14 55.2	54 27.2	0.88	54 38.8	1.06	15 37.9	2.04	19.3
17	14 59.0	15 3.3	54 52.6	1.24	55 8.5	1.41	16 28.4	2.18	20.3
18	15 8.2	15 13.7	55 26.5	1.59	55 46.7	1.77	17 21.9	2.28	21.3
19	15 19.8	15 26.3	56 8.9	1.93	56 33.1	2.08	18 17.3	2.33	22.3
20	15 33.3	15 40.8	56 58.8	2.21	57 26.0	2.31	19 13.3	2.33	23.3
21	15 48.5	15 56.3	57 54.2	2.38	58 23.1	2.41	20 8.7	2.28	24.3
22	16 4.2	16 11.9	58 51.9	2.39	59 20.2	2.32	21 2.8	2.22	25.3
23	16 19.2	16 26.1	59 47.3	2.18	60 12.3	1.98	21 55.5	2.17	26.3
24	16 32.1	16 37.2	60 34.6	1.73	60 53.5	1.41	22 47.5	2.16	27.3
25	16 41.3	16 44.1	61 8.4	1.06	61 18.7	+0.66	23 39.6	2.19	28.3
26	16 45.6	16 45.7	61 24.1	+0.24	61 24.5	-0.18	δ		29.3
27	16 44.4	16 41.7	61 19.7	-0.60	61 10.1	0.99	0 33.0	2.27	0.9
28	16 37.9	16 33.0	60 56.0	1.35	60 37.9	1.66	1 28.6	2.38	1.9
29	16 27.1	16 20.5	60 16.4	1.92	59 52.1	2.11	2 26.8	2.47	2.9
30	16 13.4	16 5.9	59 25.8	2.25	58 58.3	2.33	3 26.9	2.52	3.9
31	15 58.3	15 50.6	58 30.2	2.35	58 2.1	2.32	4 27.3	2.50	4.9
32	15 43.1	15 35.9	57 34.6	-2.26	57 8.1	-2.16	5 26.1	2.38	5.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 16 8.93	2.3935	S. 19 10 24.4	12.202
1	14 18 32.64	2.3969	19 22 32.6	12.072
2	14 20 56.56	2.4003	19 34 33.0	11.940
3	14 23 20.68	2.4037	19 46 25.4	11.807
4	14 25 45.00	2.4070	19 58 9.8	11.673
5	11 28 9.52	2.4104	20 9 46.2	11.539
6	14 30 34.25	2.4138	20 21 14.5	11.403
7	14 32 59.18	2.4171	20 32 34.6	11.266
8	14 35 24.30	2.4203	20 43 46.4	11.127
9	14 37 49.62	2.4236	20 54 49.8	10.987
10	14 40 15.13	2.4269	21 5 44.8	10.846
11	14 42 40.84	2.4302	21 16 31.3	10.704
12	14 45 6.75	2.4334	21 27 9.3	10.562
13	14 47 32.85	2.4365	21 37 38.7	10.417
14	14 49 59.13	2.4396	21 47 59.3	10.271
15	14 52 25.60	2.4427	21 58 11.2	10.125
16	14 54 52.25	2.4457	22 8 14.3	9.977
17	14 57 19.08	2.4487	22 18 8.5	9.829
18	14 59 46.09	2.4517	22 27 53.8	9.680
19	15 2 13.28	2.4547	22 37 30.1	9.529
20	15 4 40.65	2.4576	22 46 57.3	9.377
21	15 7 8.19	2.4603	22 56 15.4	9.225
22	15 9 35.89	2.4631	23 5 24.3	9.072
23	15 12 3.76	2.4658	S. 23 14 24.0	8.918

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 14 31.79	2.4684	S. 23 23 14.5	8.763
1	15 16 59.97	2.4710	23 31 55.6	8.607
2	15 19 28.31	2.4736	23 40 27.3	8.451
3	15 21 56.80	2.4761	23 48 49.7	8.294
4	15 24 25.44	2.4784	23 57 2.6	8.135
5	15 26 54.21	2.4807	24 5 5.9	7.976
6	15 29 23.12	2.4829	24 12 59.7	7.817
7	15 31 52.16	2.4851	24 20 43.9	7.656
8	15 34 21.33	2.4872	24 28 18.4	7.495
9	15 36 50.63	2.4893	24 35 43.3	7.334
10	15 39 20.05	2.4912	24 42 58.5	7.172
11	15 41 49.58	2.4931	24 50 3.9	7.008
12	15 44 19.22	2.4949	24 56 59.5	6.845
13	15 46 48.97	2.4966	25 3 45.3	6.681
14	15 49 18.81	2.4982	25 10 21.2	6.516
15	15 51 48.75	2.4998	25 16 47.2	6.351
16	15 54 18.78	2.5012	25 23 3.3	6.186
17	15 56 48.89	2.5025	25 29 9.5	6.020
18	15 59 19.08	2.5037	25 35 5.7	5.853
19	16 1 49.34	2.5049	25 40 51.9	5.687
20	16 4 19.67	2.5060	25 46 28.1	5.520
21	16 6 50.06	2.5070	25 51 54.3	5.352
22	16 9 20.51	2.5078	25 57 10.4	5.184
23	16 11 51.00	2.5085	26 2 16.4	5.016
24	16 14 21.53	2.5092	S. 26 7 12.3	4.847

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 14 21.53	2.5092	S. 26 7 12.3	4.847
1	16 16 52.10	2.5097	26 11 58.1	4.679
2	16 19 22.70	2.5102	26 16 33.8	4.510
3	16 21 53.32	2.5105	26 20 59.3	4.341
4	16 24 23.96	2.5107	26 25 14.7	4.172
5	16 26 54.61	2.5109	26 29 20.0	4.003
6	16 29 25.27	2.5110	26 33 15.1	3.833
7	16 31 55.93	2.5108	26 37 0.0	3.664
8	16 34 26.57	2.5106	26 40 34.8	3.495
9	16 36 57.20	2.5103	26 43 59.4	3.326
10	16 39 27.81	2.5098	26 47 13.9	3.157
11	16 41 58.38	2.5093	26 50 18.2	2.987
12	16 44 28.92	2.5087	26 53 12.3	2.817
13	16 46 59.42	2.5079	26 55 56.2	2.648
14	16 49 29.87	2.5070	26 58 30.0	2.479
15	16 52 0.26	2.5060	27 0 53.7	2.311
16	16 54 30.59	2.5049	27 3 7.3	2.142
17	16 57 0.85	2.5037	27 5 10.7	1.973
18	16 59 31.04	2.5024	27 7 4.0	1.804
19	17 2 1.14	2.5009	27 8 47.2	1.636
20	17 4 31.15	2.4994	27 10 20.3	1.468
21	17 7 1.07	2.4977	27 11 43.4	1.301
22	17 9 30.88	2.4959	27 12 56.5	1.134
23	17 12 0.58	2.4941	S. 27 13 59.5	0.967

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 14 30.17	2.4921	S. 27 14 52.5	0.800
1	17 16 59.63	2.4899	27 15 35.5	0.634
2	17 19 28.96	2.4877	27 16 8.6	0.469
3	17 21 58.15	2.4853	27 16 31.8	0.304
4	17 24 27.19	2.4828	27 16 45.1	−0.139
5	17 26 56.09	2.4803	27 16 48.5	+0.026
6	17 29 24.83	2.4776	27 16 42.0	0.189
7	17 31 53.40	2.4748	27 16 25.8	0.352
8	17 34 21.81	2.4720	27 15 59.8	0.515
9	17 36 50.04	2.4690	27 15 24.0	0.677
10	17 39 18.09	2.4659	27 14 3.5	0.838
11	17 41 45.95	2.4627	27 13 43.4	0.999
12	17 44 13.62	2.4595	27 12 38.6	1.159
13	17 46 41.09	2.4561	27 11 24.3	1.318
14	17 49 8.35	2.4525	27 10 0.4	1.477
15	17 51 35.39	2.4489	27 8 27.0	1.636
16	17 54 2.22	2.4452	27 6 44.1	1.793
17	17 56 28.82	2.4414	27 4 51.8	1.949
18	17 58 55.19	2.4375	27 2 50.2	2.105
19	18 1 21.32	2.4336	27 0 39.2	2.261
20	18 3 47.22	2.4296	26 58 18.9	2.414
21	18 6 12.87	2.4254	26 55 49.5	2.567
22	18 8 38.27	2.4212	26 53 10.9	2.720
23	18 11 3.41	2.4168	26 50 23.1	2.872
24	18 13 28.29	2.4124	S. 26 47 26.3	3.022

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 13 28.29	2.4194	S. 26 47 26.3	3.022
1	18 15 52.90	2.4079	26 44 20.5	3.172
2	18 18 17.24	2.4034	26 41 5.7	3.322
3	18 20 41.31	2.3988	26 37 41.9	3 470
4	18 23 5.10	2.3941	26 34 9.3	3.616
5	18 25 28.60	2.3892	26 30 28.0	3.762
6	18 27 51.81	2.3843	26 26 37.9	3.907
7	18 30 14.72	2.3794	26 22 39.1	4.052
8	18 32 37.34	2.3745	26 18 31.7	4.195
9	18 34 59.66	2.3694	26 14 15.7	4.337
10	18 37 21.67	2.3643	26 9 51.2	4.478
11	18 39 43.37	2.3592	26 5 18.3	4.618
12	18 42 4.77	2.3540	26 0 37.0	4.757
13	18 44 25.85	2.3486	25 55 47.4	4.896
14	18 46 46.60	2.3432	25 50 49.5	5.033
15	18 49 7.03	2.3377	25 45 43.5	5.168
16	18 51 27.13	2.3323	25 40 29.4	5.303
17	18 53 46.91	2.3269	25 35 7.2	5.438
18	18 56 6.36	2.3213	25 29 36.9	5.571
19	18 58 25.47	2.3158	25 23 58.7	5.702
20	19 0 44.25	2.3102	25 18 12.7	5.832
21	19 3 2.69	2.3045	25 12 18.9	5.961
22	19 5 20.79	2.2987	25 6 17.4	6.089
23	19 7 38.54	2.2930	S. 25 0 8.2	6.217

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 9 55.95	2.2872	S. 24 53 51.4	6.343
1	19 12 13.01	2.2814	24 47 27.1	6.467
2	19 14 29.72	2.2756	24 40 55.4	6.591
3	19 16 46.08	2.2697	24 34 16.2	6.714
4	19 19 2.09	2.2639	24 27 29.7	6.835
5	19 21 17.75	2.2580	24 20 36.0	6.955
6	19 23 33.05	2.2520	24 13 35.1	7.074
7	19 25 47.99	2.2461	24 6 27.1	7.192
8	19 28 2.58	2.2402	23 59 12.0	7.309
9	19 30 16.81	2.2341	23 51 50.0	7.424
10	19 32 30.67	2.2281	23 44 21.1	7.539
11	19 34 44.18	2.2222	23 36 45.3	7.652
12	19 36 57.33	2.2162	23 29 2.8	7.764
13	19 39 10.12	2.2102	23 21 13.6	7.875
14	19 41 22.55	2.2041	23 13 17.8	7.985
15	19 43 34.61	2.1980	23 5 15.4	8.093
16	19 45 46.31	2.1920	22 57 6.6	8.200
17	19 47 57.65	2.1860	22 48 51.4	8.307
18	19 50 8.63	2.1800	22 40 29.8	8.412
19	19 52 19.25	2.1740	22 32 2.0	8.515
20	19 54 29.51	2.1679	22 23 28.0	8.618
21	19 56 39.40	2.1618	22 14 47.8	8.720
22	19 58 48.93	2.1559	22 6 1.6	8.820
23	20 0 58.11	2.1500	21 57 9.4	8.920
24	20 3 6.93	2.1440	S. 21 48 11.2	9.018

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 3 6.93	2.1440	S. 21 48 11.2	9.018
1	20 5 15.39	2.1380	21 39 7.2	9.114
2	20 7 23.49	2.1320	21 29 57.5	9.210
3	20 9 31.23	2.1261	21 20 42.0	9.305
4	20 11 38.62	2.1202	21 11 20.9	9.398
5	20 13 45.66	2.1143	21 1 54.3	9.489
6	20 15 52.34	2.1084	20 52 22.2	9.580
7	20 17 58 67	2.1026	20 42 44.7	9.670
8	20 20 4.65	2.0967	20 33 1.8	9.759
9	20 22 10.28	2.0909	20 23 13.6	9.847
10	20 24 15.56	2.0852	20 13 20.2	9.933
11	20 26 20.50	2.0794	20 3 21.6	10.018
12	20 28 25.09	2.0737	19 53 18.0	10.102
13	20 30 29.34	2.0680	19 43 9.4	10.185
14	20 32 33.25	2.0624	19 32 55.8	10.267
15	20 34 36.83	2.0568	19 22 37.3	10.348
16	20 36 40.07	2.0512	19 12 14.0	10.428
17	20 38 42.97	2.0456	19 1 46.0	10.506
18	20 40 45.54	2.0401	18 51 13.3	10.583
19	20 42 47.78	2.0347	18 40 36.0	10.660
20	20 44 49.70	2.0292	18 29 54.1	10.735
21	20 46 51.29	2.0238	18 19 7.8	10.808
22	20 48 52.56	2.0185	18 8 17.1	10.881
23	20 50 53.51	2.0131	S. 17 57 22.0	10.953

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 52 54.13	2.0078	S. 17 46 22.7	11.023
1	20 54 54.44	2.0026	17 35 19.2	11.093
2	20 56 54.44	1.9974	17 24 11.5	11.162
3	20 58 54.13	1.9923	17 12 59.7	11.230
4	21 0 53.51	1.9872	17 1 43.9	11.297
5	21 2 52.59	1.9821	16 50 24.1	11.362
6	21 4 51.36	1.9771	16 39 0.4	11.427
7	21 6 49.84	1.9722	16 27 32.9	11.490
8	21 8 48.02	1.9672	16 16 1.6	11.552
9	21 10 45.90	1 9623	16 4 26.6	11.613
10	21 12 43.49	1.9575	15 52 48.0	11.673
11	21 14 40.80	1.9527	15 41 5.8	11.732
12	21 16 37.82	1.9480	15 29 20.1	11.790
13	21 18 34.56	1.9433	15 17 31.0	11.847
14	21 20 31.02	1.9387	15 5 38.4	11.904
15	21 22 27.21	1.9342	14 53 42.5	11.959
16	21 24 23.13	1.9297	14 41 43.3	12.013
17	21 26 18.77	1.9251	14 29 40.9	12.067
18	21 28 14.14	1.9207	14 17 35.3	12.119
19	21 30 9.25	1.9164	14 5 26.6	12.170
20	21 32 4.11	1.9121	13 53 14.9	12.220
21	21 33 58.71	1.9078	13 41 0.2	12.269
22	21 35 53.05	1.9037	13 28 42.6	12.317
23	21 37 47.15	1.8996	13 16 22.1	12.365
24	21 39 41.00	1.8955	S. 13 3 58.8	12.412

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					WEDNESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 39 41.00	1.8955	S. 13 3 58.8	12.412	0	23 7 6.55	1.7709	S. 2 31 58.0	13.597
1	21 41 34.61	1.8915	12 51 32.7	12.457	1	23 8 52.77	1.7698	2 18 22.0	13.602
2	21 43 27.98	1.8875	12 39 4.0	12.501	2	23 10 38.93	1.7688	2 4 45.8	13.605
3	21 45 21.11	1.8836	12 26 32.6	12.545	3	23 12 25.03	1.7678	1 51 9.4	13.608
4	21 47 14.01	1.8798	12 13 58.6	12.587	4	23 14 11.07	1.7669	1 37 32.8	13.611
5	21 49 6.68	1.8760	12 1 22.1	12.628	5	23 15 57.06	1.7662	1 23 56.1	13.612
6	21 50 59.13	1.8723	11 48 43.2	12.668	6	23 17 43.01	1.7655	1 10 19.3	13.613
7	21 52 51.35	1.8686	11 36 1.9	12.708	7	23 19 28.92	1.7647	0 56 42.5	13.613
8	21 54 43.36	1.8650	11 23 18.2	12.748	8	23 21 14.78	1.7640	0 43 5.7	13.613
9	21 56 35.15	1.8614	11 10 32.1	12.787	9	23 23 0.60	1.7634	0 29 29.0	13.611
10	21 58 26.73	1.8579	10 57 43.8	12.823	10	23 24 46.39	1.7630	0 15 52.4	13.608
11	22 0 18.10	1.8545	10 44 53.3	12.859	11	23 26 32.16	1.7626	S. 0 2 16.0	13.606
12	22 2 9.27	1.8512	10 32 0.7	12.894	12	23 28 17.90	1.7622	N. 0 11 20.3	13.603
13	22 4 0.24	1.8478	10 19 6.0	12.929	13	23 30 3.62	1.7618	0 24 56.3	13.598
14	22 5 51.01	1.8446	10 6 9.2	12.962	14	23 31 49.32	1.7616	0 38 32.0	13.593
15	22 7 41.59	1.8414	9 53 10.5	12.994	15	23 33 35.01	1.7614	0 52 7.4	13.587
16	22 9 31.98	1.8383	9 40 9.9	13.026	16	23 35 20.69	1.7612	1 5 42.4	13.580
17	22 11 22.19	1.8352	9 27 7.4	13.057	17	23 37 6.36	1.7612	1 19 17.0	13.573
18	22 13 12.21	1.8323	9 14 3.1	13.086	18	23 38 52.03	1.7612	1 32 51.2	13.565
19	22 15 2.05	1.8293	9 0 57.1	13.115	19	23 40 37.70	1.7612	1 46 24.8	13.556
20	22 16 51.72	1.8264	8 47 49.3	13.144	20	23 42 23.38	1.7613	1 59 57.9	13.547
21	22 18 41.22	1.8236	8 34 39.8	13.172	21	23 44 9.06	1.7614	2 13 30.4	13.536
22	22 20 30.55	1.8208	8 21 28.7	13.198	22	23 45 54.75	1.7617	2 27 2.2	13.524
23	22 22 19.72	1.8181	S. 8 8 16.1	13.223	23	23 47 40.46	1.7621	N. 2 40 33.3	13.512
	TUESDAY 10.					THURSDAY 12.			
0	22 24 8.72	1.8154	S. 7 55 1.9	13.248	0	23 49 26.20	1.7625	N. 2 54 3.7	13.500
1	22 25 57.56	1.8128	7 41 46.3	13.272	1	23 51 11.96	1.7628	3 7 33.3	13.487
2	22 27 46.26	1.8104	7 28 29.3	13.295	2	23 52 57.74	1.7632	3 21 2.1	13.472
3	22 29 34.81	1.8080	7 15 10.9	13.317	3	23 54 43.55	1.7638	3 34 30.0	13.457
4	22 31 23.22	1.8056	7 1 51.2	13.338	4	23 56 29.40	1.7645	3 47 57.0	13.442
5	22 33 11.48	1.8032	6 48 30.3	13.359	5	23 58 15.29	1.7652	4 1 23.1	13.426
6	22 34 59.60	1.8009	6 35 8.1	13.379	6	0 0 1.22	1.7659	4 14 48.2	13.410
7	22 36 47.59	1.7987	6 21 44.8	13.398	7	0 1 47.20	1.7667	4 28 12.3	13.392
8	22 38 35.45	1.7966	6 8 20.4	13.416	8	0 3 33.22	1.7675	4 41 35.2	13.373
9	22 40 23.18	1.7945	5 54 54.9	13.433	9	0 5 19.30	1.7685	4 54 57.0	13.353
10	22 42 10.79	1.7925	5 41 28.4	13.449	10	0 7 5.44	1.7694	5 8 17.6	13.333
11	22 43 58.28	1.7906	5 28 1.0	13.465	11	0 8 51.63	1.7703	5 21 37.0	13.313
12	22 45 45.66	1.7887	5 14 32.6	13.480	12	0 10 37.88	1.7714	5 34 55.2	13.292
13	22 47 32.92	1.7869	5 1 3.4	13.494	13	0 12 24.20	1.7727	5 48 12.1	13.270
14	22 49 20.08	1.7851	4 47 33.4	13.508	14	0 14 10.60	1.7739	6 1 27.6	13.247
15	22 51 7.13	1.7833	4 34 2.5	13.521	15	0 15 57.07	1.7752	6 14 41.7	13.223
16	22 52 54.08	1.7817	4 20 30.9	13.532	16	0 17 43.62	1.7765	6 27 54.3	13.198
17	22 54 40.94	1.7802	4 6 58.7	13.542	17	0 19 30.25	1.7779	6 41 5.5	13.174
18	22 56 27.70	1.7786	3 53 25.8	13.552	18	0 21 16.97	1.7794	6 54 15.2	13.148
19	22 58 14.37	1.7772	3 39 52.4	13.562	19	0 23 3.78	1.7809	7 7 23.3	13.121
20	23 0 0.96	1.7758	3 26 18.4	13.571	20	0 24 50.68	1.7824	7 20 29.7	13.093
21	23 1 47.47	1.7745	3 12 43.9	13.578	21	0 26 37.67	1.7840	7 33 34.5	13.066
22	23 3 33.90	1.7733	2 59 9.0	13.585	22	0 28 24.76	1.7858	7 46 37.6	13.037
23	23 5 20.26	1.7721	2 45 33.7	13.592	23	0 30 11.96	1.7876	7 59 38.9	13.007
24	23 7 6.55	1.7709	S. 2 31 58.0	13.597	24	0 31 59.27	1.7894	N. 8 12 38.5	12.977

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 31 59.27	1.7894	N. 8 12 38.5	12.977	0	2 1 1.72	1.9407	N.17 45 57.9	10.604
1	0 33 46.69	1.7912	8 25 36.2	12.946	1	2 2 58.29	1.9451	17 56 32.1	10.534
2	0 35 34.22	1.7932	8 38 32.0	12.914	2	2 4 55.13	1.9495	18 7 2.0	10.463
3	0 37 21.87	1.7952	8 51 25.9	12.882	3	2 6 52.23	1.9539	18 17 27.7	10.392
4	0 39 9.64	1.7972	9 4 17.8	12.848	4	2 8 49.60	1.9584	18 27 49.1	10.320
5	0 40 57.53	1.7992	9 17 7.7	12.814	5	2 10 47.24	1.9629	18 38 6.1	10.247
6	0 42 45.55	1.8014	9 29 55.5	12.779	6	2 12 45.15	1.9675	18 48 18.7	10.173
7	0 44 33.70	1.8037	9 42 41.2	12.743	7	2 14 43.34	1.9721	18 58 26.8	10.098
8	0 46 21.99	1.8059	9 55 24.7	12.707	8	2 16 41.80	1.9766	19 8 30.4	10.023
9	0 48 10.41	1.8082	10 8 6.1	12.671	9	2 18 40.53	1.9812	19 18 29.5	9.947
10	0 49 58.98	1.8107	10 20 45.2	12.633	10	2 20 39.54	1.9859	19 28 24.0	9.868
11	0 51 47.69	1.8131	10 33 22.0	12.594	11	2 22 38.84	1.9907	19 38 13.7	9.789
12	0 53 36.55	1.8156	10 45 56.5	12.555	12	2 24 38.42	1.9954	19 47 58.7	9.709
13	0 55 25.56	1.8182	10 58 28.6	12.514	13	2 26 38.29	2.0002	19 57 38.9	9.630
14	0 57 14.73	1.8208	11 10 58.2	12.472	14	2 28 38.44	2.0049	20 7 14.3	9.549
15	0 59 4.06	1.8235	11 23 25.3	12.431	15	2 30 38.88	2.0098	20 16 44.8	9.467
16	1 0 53.55	1.8262	11 35 49.9	12.389	16	2 32 39.61	2.0147	20 26 10.3	9.383
17	1 2 43.20	1.8289	11 48 12.0	12.347	17	2 34 40.64	2.0196	20 35 30.8	9.299
18	1 4 33.02	1.8317	12 0 31.5	12.303	18	2 36 41.96	2.0245	20 44 46.2	9.214
19	1 6 23.01	1.8347	12 12 48.3	12.257	19	2 38 43.58	2.0294	20 53 56.5	9.128
20	1 8 13.18	1.8377	12 25 2.3	12.211	20	2 40 45.49	2.0343	21 3 1.6	9.042
21	1 10 3.53	1.8407	12 37 13.6	12.165	21	2 42 47.70	2.0393	21 12 1.5	8.954
22	1 11 54.06	1.8437	12 49 22.1	12.118	22	2 44 50.21	2.0443	21 20 56.1	8.865
23	1 13 44.78	1.8468	N.13 1 27.7	12.070	23	2 46 53.02	2.0494	N.21 29 45.3	8.776
	SATURDAY 14.					**MONDAY 16.**			
0	1 15 35.68	1.8499	N.13 13 30.5	12.022	0	2 48 56.14	2.0545	N.21 38 29.2	8.686
1	1 17 26.77	1.8532	13 25 30.3	11.972	1	2 50 59.56	2.0595	21 47 7.6	8.594
2	1 19 18.06	1.8565	13 37 27.1	11.921	2	2 53 3.28	2.0646	21 55 40.5	8.502
3	1 21 9.55	1.8598	13 49 20.8	11.869	3	2 55 7.31	2.0697	22 4 7.8	8.408
4	1 23 1.24	1.8632	14 1 11.4	11.817	4	2 57 11.64	2.0748	22 12 29.5	8.314
5	1 24 53.13	1.8666	14 12 58.9	11.765	5	2 59 16.28	2.0799	22 20 45.5	8.219
6	1 26 45.23	1.8701	14 24 43 2	11.712	6	3 1 21.23	2.0851	22 28 55.8	8.123
7	1 28 37.54	1.8736	14 36 24.3	11.657	7	3 3 26.49	2.0902	22 37 0.3	8.026
8	1 30 30.06	1.8772	14 48 2.0	11.601	8	3 5 32.06	2.0953	22 44 58.9	7.928
9	1 32 22.80	1.8807	14 59 36.4	11.545	9	3 7 37.93	2.1004	22 52 51.7	7.830
10	1 34 15.75	1.8844	15 11 7.4	11.488	10	3 9 44.11	2.1056	23 0 38.5	7.729
11	1 36 8.93	1.8882	15 22 35.0	11.431	11	3 11 50.61	2.1108	23 8 19.2	7.628
12	1 38 2.33	1.8919	15 33 59.1	11.372	12	3 13 57.41	2.1159	23 15 53.8	7.526
13	1 39 55.96	1.8958	15 45 19.6	11.313	13	3 16 4.52	2.1212	23 23 22.3	7.423
14	1 41 49.82	1.8997	15 56 36.6	11.253	14	3 18 11.95	2.1264	23 30 44.6	7.320
15	1 43 43.92	1.9036	16 7 50.0	11.192	15	3 20 19.69	2.1316	23 38 0.7	7.216
16	1 45 38.25	1.9075	16 18 59.7	11.130	16	3 22 27.74	2.1367	23 45 10.5	7.110
17	1 47 32.82	1.9115	16 30 5.6	11.067	17	3 24 36.10	2.1419	23 52 13.9	7.003
18	1 49 27.63	1.9156	16 41 7.7	11.003	18	3 26 44.77	2.1471	23 59 10.9	6.896
19	1 51 22.69	1.9197	16 52 6.0	10.939	19	3 28 53.75	2.1522	24 6 1.4	6.787
20	1 53 17.99	1.9238	17 3 0.4	10.873	20	3 31 3.04	2.1574	24 12 45.4	6.678
21	1 55 13.54	1.9280	17 13 50.8	10.807	21	3 33 12.64	2.1626	24 19 22.8	6.568
22	1 57 9.35	1.9322	17 24 37.2	10.740	22	3 35 22.55	2.1677	24 25 53.6	6.457
23	1 59 5.41	1.9364	17 35 19.6	10.672	23	3 37 32.77	2.1729	24 32 17.6	6.344
24	2 1 1.72	1.9407	N.17 45 57.9	10.604	24	3 39 43.30	2.1780	N.24 38 34.9	6.232

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	3 39 43.30	2.1780	N.24 38 34.9	6.232
1	3 41 54.13	2.1831	24 44 45.4	6.118
2	3 44 5.27	2.1882	24 50 49.0	6.003
3	3 46 16.71	2.1932	24 56 45.7	5.877
4	3 48 28.45	2.1982	25 2 35.4	5.770
5	3 50 40.50	2.2033	25 8 18.1	5.652
6	3 52 52.85	2.2083	25 13 53.7	5.533
7	3 55 5.50	2.2132	25 19 22.1	5.414
8	3 57 18.44	2.2182	25 24 43.4	5.294
9	3 59 31.68	2.2231	25 29 57.4	5.172
10	4 1 45.21	2.2279	25 35 4.0	5.049
11	4 3 59.03	2.2328	25 40 3.3	4.927
12	4 6 13.15	2.2377	25 44 55.2	4.803
13	4 8 27.55	2.2424	25 49 39.6	4.678
14	4 10 42.24	2.2472	25 54 16.5	4.552
15	4 12 57.22	2.2520	25 58 45.8	4.425
16	4 15 12.48	2.2566	26 3 7.5	4.297
17	4 17 28.01	2.2612	26 7 21.5	4.169
18	4 19 43.82	2.2658	26 11 27.8	4.040
19	4 21 59.91	2.2704	26 15 26.3	3.910
20	4 24 16.27	2.2748	26 19 17.0	3.779
21	4 26 32.89	2.2792	26 22 59.8	3.647
22	4 28 49.78	2.2837	26 26 34.7	3.514
23	4 31 6.93	2.2881	N.26 30 1.5	3.380

WEDNESDAY 18.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	4 33 24.35	2.2924	N.26 33 20.3	3.246
1	4 35 42.02	2.2966	26 36 31.0	3.111
2	4 37 59.94	2.3007	26 39 33.6	2.976
3	4 40 18.11	2.3049	26 42 28.1	2.840
4	4 42 36.53	2.3090	26 45 14.4	2.702
5	4 44 55.19	2.3130	26 47 52.4	2.563
6	4 47 14.09	2.3170	26 50 22.0	2.424
7	4 49 33.23	2.3208	26 52 43.3	2.285
8	4 51 52.59	2.3246	26 54 56.2	2.145
9	4 54 12.18	2.3283	26 57 0.7	2.004
10	4 56 31.99	2.3320	26 58 56.7	1.862
11	4 58 52.02	2.3357	27 0 44.1	1.719
12	5 1 12.27	2.3393	27 2 23.0	1.577
13	5 3 32.73	2.3427	27 3 53.3	1.433
14	5 5 53.39	2.3460	27 5 14.9	1.288
15	5 8 14.25	2.3493	27 6 27.8	1.143
16	5 10 35.31	2.3527	27 7 32.0	0.998
17	5 12 56.57	2.3559	27 8 27.5	0.852
18	5 15 18.02	2.3590	27 9 14.2	0.704
19	5 17 39.65	2.3619	27 9 52.0	0.556
20	5 20 1.45	2.3648	27 10 20.9	0.408
21	5 22 23.43	2.3677	27 10 41.0	0.260
22	5 24 45.58	2.3705	27 10 52.1	+0.111
23	5 27 7.89	2.3732	27 10 54.3	−0.038
24	5 29 30.37	2.3759	N.27 10 47.5	0.188

THURSDAY 19.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	5 29 30.37	2.3759	N.27 10 47.5	0.188
1	5 31 53.00	2.3784	27 10 31.7	0.339
2	5 34 15.78	2.3808	27 10 6.8	0.491
3	5 36 38.70	2.3832	27 9 32.8	0.642
4	5 39 1.76	2.3855	27 8 49.7	0.794
5	5 41 24.96	2.3877	27 7 57.5	0.947
6	5 43 48.28	2.3898	27 6 56.1	1.099
7	5 46 11.73	2.3918	27 5 45.6	1.252
8	5 48 35.30	2.3937	27 4 25.9	1.406
9	5 50 58.98	2.3956	27 2 56.9	1.560
10	5 53 22.77	2.3973	27 1 18.7	1.713
11	5 55 46.66	2.3989	26 59 31.3	1.867
12	5 58 10.64	2.4005	26 57 34.6	2.022
13	6 0 34.72	2.4021	26 55 28.6	2.177
14	6 2 58.89	2.4034	26 53 13.3	2.333
15	6 5 23.13	2.4047	26 50 48.6	2.489
16	6 7 47.45	2.4059	26 48 14.6	2.644
17	6 10 11.84	2.4071	26 45 31.3	2.800
18	6 12 36.30	2.4082	26 42 38.6	2.957
19	6 15 0.82	2.4091	26 39 36.5	3.112
20	6 17 25.39	2.4099	26 36 25.1	3.268
21	6 19 50.01	2.4107	26 33 4.3	3.425
22	6 22 14.67	2.4114	26 29 34.1	3.582
23	6 24 39.38	2.4121	N.26 25 54.5	3.739

FRIDAY 20.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	6 27 4.12	2.4125	N.26 22 5.4	3.896
1	6 29 28.88	2.4129	26 18 6.9	4.053
2	6 31 53.67	2.4133	26 13 59.0	4.209
3	6 34 18.48	2.4136	26 9 41.8	4.365
4	6 36 43.30	2.4137	26 5 15.2	4.522
5	6 39 8.13	2.4138	26 0 39.2	4.678
6	6 41 32.96	2.4138	25 55 53.8	4.835
7	6 43 57.79	2.4137	25 50 59.0	4.992
8	6 46 22.61	2.4136	25 45 54.8	5.148
9	6 48 47.42	2.4134	25 40 41.2	5.304
10	6 51 12.22	2.4131	25 35 18.3	5.460
11	6 53 36.99	2.4127	25 29 46.0	5.616
12	6 56 1.74	2.4122	25 24 4.4	5.771
13	6 58 26.46	2.4117	25 18 13.5	5.927
14	7 0 51.14	2.4110	25 12 13.2	6.082
15	7 3 15.78	2.4103	25 6 3.6	6.237
16	7 5 40.38	2.4096	24 59 44.7	6.392
17	7 8 4.93	2.4087	24 53 16.6	6.546
18	7 10 29.43	2.4078	24 46 39.2	6.700
19	7 12 53.87	2.4066	24 39 52.6	6.853
20	7 15 18.25	2.4058	24 32 56.8	7.007
21	7 17 42.57	2.4047	24 25 51.8	7.159
22	7 20 6.82	2.4036	24 18 37.7	7.311
23	7 22 31.00	2.4023	24 11 14.5	7.463
24	7 24 55.10	2.4010	N.24 3 42.1	7.616

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 21.					MONDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 24 55.10	2.4010	N.24 3 42.1	7.616	0	9 17 55.62	2.3011	N.15 17 20.7	13.953
1	7 27 19.12	2.3997	23 56 0.6	7.767	1	9 20 13.62	2.2990	15 3 20.4	14.058
2	7 29 43.06	2.3982	23 48 10.1	7.916	2	9 22 31.50	2.2970	14 49 13.8	14.162
3	7 32 6.91	2.3967	23 40 10.7	8.065	3	9 24 49.26	2.2949	14 35 1.0	14.264
4	7 34 30.67	2.3952	23 32 2.3	8.215	4	9 27 6.89	2.2928	14 20 42.1	14.365
5	7 36 54.34	2.3937	23 23 44.9	8.364	5	9 29 24.40	2.2909	14 6 17.2	14.464
6	7 39 17.91	2.3920	23 15 18.6	8.512	6	9 31 41.80	2.2890	13 51 46.4	14.562
7	7 41 41.38	2.3903	23 6 43.4	8.660	7	9 33 59.08	2.2870	13 37 9.7	14.659
8	7 44 4.75	2.3886	22 57 59.4	8.807	8	9 36 16.24	2.2850	13 22 27.3	14.754
9	7 46 28.01	2.3868	22 49 6.6	8.953	9	9 38 33.28	2.2831	13 7 39.2	14.848
10	7 48 51.17	2.3851	22 40 5.0	9.099	10	9 40 50.21	2.2813	12 52 45.5	14.941
11	7 51 14.22	2.3832	22 30 54.7	9.243	11	9 43 7.04	2.2796	12 37 46.3	15.032
12	7 53 37.15	2.3812	22 21 35.8	9.388	12	9 45 23.76	2.2778	12 22 41.7	15.121
13	7 55 59.97	2.3793	22 12 8.2	9.532	13	9 47 40.37	2.2760	12 7 31.8	15.208
14	7 58 22.67	2.3773	22 2 32.0	9.675	14	9 49 56.88	2.2744	11 52 16.7	15.294
15	8 0 45.25	2.3753	21 52 47.2	9.817	15	9 52 13.30	2.2728	11 36 56.5	15.378
16	8 3 7.71	2.3733	21 42 53.9	9.958	16	9 54 29.62	2.2712	11 21 31.3	15.462
17	8 5 30.05	2.3712	21 32 52.2	10.098	17	9 56 45.85	2.2697	11 6 1.1	15.543
18	8 7 52.26	2.3691	21 22 42.2	10.237	18	9 59 1.98	2.2682	10 50 26.1	15.623
19	8 10 14.34	2.3669	21 12 23.8	10.376	19	10 1 18.03	2.2667	10 34 46.3	15.702
20	8 12 36.29	2.3648	21 1 57.1	10.514	20	10 3 33.99	2.2653	10 19 1.9	15.778
21	8 14 58.12	2.3627	20 51 22.1	10.652	21	10 5 49.87	2.2640	10 3 13.0	15.853
22	8 17 19.82	2.3605	20 40 38.9	10.788	22	10 8 5.67	2.2627	9 47 19.6	15.926
23	8 19 41.38	2.3582	N.20 29 47.6	10.923	23	10 10 21.40	2.2615	N. 9 31 21.9	15.997
	SUNDAY 22.					TUESDAY 24.			
0	8 22 2.80	2.3559	N.20 18 48.2	11.057	0	10 12 37.05	2.2603	N. 9 15 20.0	16.067
1	8 24 24.09	2.3537	20 7 40.8	11.190	1	10 14 52.63	2.2592	8 59 13.9	16.135
2	8 26 45.24	2.3514	19 56 25.4	11.322	2	10 17 8.15	2.2582	8 43 3.8	16.202
3	8 29 6.26	2.3492	19 45 2.1	11.453	3	10 19 23.61	2.2572	8 26 49.7	16.267
4	8 31 27.14	2.3468	19 33 31.0	11.584	4	10 21 39.01	2.2562	8 10 31.8	16.330
5	8 33 47.88	2.3445	19 21 52.0	11.714	5	10 23 54.35	2.2552	7 54 10.1	16.391
6	8 36 8.48	2.3422	19 10 5.3	11.842	6	10 26 9.64	2.2544	7 37 44.9	16.449
7	8 38 28.94	2.3398	18 58 11.0	11.969	7	10 28 24.88	2.2537	7 21 16.2	16.507
8	8 40 49.26	2.3376	18 46 9.0	12.096	8	10 30 40.08	2.2529	7 4 44.0	16.564
9	8 43 9.45	2.3353	18 33 59.5	12.220	9	10 32 55.23	2.2522	6 48 8.5	16.618
10	8 45 29.50	2.3329	18 21 42.6	12.344	10	10 35 10.35	2.2517	6 31 29.8	16.671
11	8 47 49.40	2.3305	18 9 18.2	12.467	11	10 37 25.44	2.2512	6 14 48.0	16.721
12	8 50 9.16	2.3282	17 56 46.5	12.588	12	10 39 40.49	2.2507	5 58 3.3	16.769
13	8 52 28.78	2.3259	17 44 7.6	12.708	13	10 41 55.52	2.2503	5 41 15.7	16.816
14	8 54 48.27	2.3237	17 31 21.5	12.828	14	10 44 10.53	2.2500	5 24 25.3	16.862
15	8 57 7.62	2.3213	17 18 28.2	12.947	15	10 46 25.52	2.2497	5 7 32.3	16.905
16	8 59 26.83	2.3190	17 5 27.9	13.063	16	10 48 40.49	2.2495	4 50 36.7	16.947
17	9 1 45.90	2.3167	16 52 20.6	13.179	17	10 50 55.46	2.2494	4 33 38.7	16.986
18	9 4 4.83	2.3144	16 39 6.4	13.293	18	10 53 10.42	2.2493	4 16 38.4	17.023
19	9 6 23.63	2.3122	16 25 45.4	13.407	19	10 55 25.38	2.2493	3 59 35.9	17.059
20	9 8 42.29	2.3099	16 12 17.6	13.518	20	10 57 40.34	2.2493	3 42 31.3	17.092
21	9 11 0.82	2.3077	15 58 43.2	13.628	21	10 59 55.30	2.2495	3 25 24.8	17.124
22	9 13 19.22	2.3056	15 45 2.2	13.737	22	11 2 10.28	2.2497	3 8 16.4	17.154
23	9 15 37.49	2.3033	15 31 14.7	13.846	23	11 4 25.27	2.2500	2 51 6.3	17.182
24	9 17 55.62	2.3011	N.15 17 20.7	13.953	24	11 6 40.28	2.2503	N. 2 33 54.6	17.208

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 6 40.28	2.2503	N. 2 33 54.6	17.208
1	11 8 55.31	2.2507	2 16 41.4	17.232
2	11 11 10.37	2.2512	1 59 26.8	17.254
3	11 13 25.46	2.2517	1 42 10.9	17.274
4	11 15 40.58	2.2524	1 24 53.9	17.292
5	11 17 55.75	2.2532	1 7 35.8	17.309
6	11 20 10.96	2.2539	0 50 16.8	17.322
7	11 22 26.22	2.2547	0 32 57.1	17.334
8	11 24 41.53	2.2536	N. 0 15 36.7	17.345
9	11 26 56.89	2.2565	S. 0 1 44.3	17.353
10	11 29 12.31	2.2576	0 19 5.7	17.359
11	11 31 27.80	2.2587	0 36 27.4	17.363
12	11 33 43.36	2.2599	0 53 49.3	17.365
13	11 35 58.99	2.2612	1 11 11.2	17.365
14	11 38 14.70	2.2625	1 28 33.1	17.363
15	11 40 30.49	2.2639	1 45 54.8	17.359
16	11 42 46.37	2.2654	2 3 16.2	17.353
17	11 45 2.34	2.2669	2 20 37.2	17.345
18	11 47 18.40	2.2685	2 37 57.6	17.335
19	11 49 34.56	2.2702	2 55 17.4	17.322
20	11 51 50.83	2.2720	3 12 36.3	17.307
21	11 54 7.20	2.2738	3 29 54.3	17.291
22	11 56 23.68	2.2757	3 47 11.2	17.272
23	11 58 40.28	2.2777	S. 4 4 27.0	17.252

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 0 57.00	2.2797	S. 4 21 41.5	17.230
1	12 3 13.84	2.2818	4 38 54.6	17.205
2	12 5 30.81	2.2839	4 56 6.1	17.177
3	12 7 47.91	2.2861	5 13 15.9	17.148
4	12 10 5.14	2.2884	5 30 23.9	17.117
5	12 12 22.52	2.2908	5 47 30.0	17.084
6	12 14 40.04	2.2932	6 4 34.0	17.049
7	12 16 57.71	2.2957	6 21 35.9	17.012
8	12 19 15.53	2.2982	6 38 35.4	16.972
9	12 21 33.50	2.3008	6 55 32.5	16.930
10	12 23 51.63	2.3035	7 12 27.0	16.886
11	12 26 9.92	2.3063	7 29 18.8	16.841
12	12 28 28.38	2.3091	7 46 7.9	16.793
13	12 30 47.01	2.3119	8 2 54.0	16.743
14	12 33 5.81	2.3148	8 19 37.0	16.691
15	12 35 24.79	2.3178	8 36 16.9	16.637
16	12 37 43.95	2.3208	8 52 53.4	16.580
17	12 40 3.29	2.3238	9 9 26.5	16.522
18	12 42 22.81	2.3269	9 25 56.1	16.462
19	12 44 42.52	2.3302	9 42 21.9	16.398
20	12 47 2.43	2.3335	9 58 43.9	16.334
21	12 49 22.54	2.3367	10 15 2.0	16.267
22	12 51 42.84	2.3400	10 31 16.0	16.198
23	12 54 3.34	2.3434	10 47 25.8	16.127
24	12 56 24.05	2.3468	S. 11 3 31.3	16.055

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 56 24.05	2.3468	S. 11 3 31.3	16.055
1	12 58 44.96	2.3502	11 19 32.4	15.980
2	13 1 6.08	2.3538	11 35 28.9	15.902
3	13 3 27.42	2.3574	11 51 20.7	15.823
4	13 5 48.97	2.3610	12 7 7.7	15.742
5	13 8 10.74	2.3647	12 22 49.8	15.660
6	13 10 32.73	2.3683	12 38 26.9	15.575
7	13 12 54.94	2.3720	12 53 58.8	15.487
8	13 15 17.37	2.3758	13 9 25.4	15.398
9	13 17 40.03	2.3796	13 24 46.6	15.307
10	13 20 2.92	2.3834	13 40 2.3	15.214
11	13 22 26.04	2.3872	13 55 12.3	15.118
12	13 24 49.38	2.3910	14 10 16.5	15.021
13	13 27 12.96	2.3949	14 25 14.8	14.922
14	13 29 36.77	2.3988	14 40 7.2	14.822
15	13 32 0.82	2.4028	14 54 53.5	14.719
16	13 34 25.11	2.4067	15 9 33.5	14.614
17	13 36 49.63	2.4107	15 24 7.2	14.508
18	13 39 14.39	2.4147	15 38 34.5	14.400
19	13 41 39.39	2.4187	15 52 55.2	14.290
20	13 44 4.63	2.4227	16 7 9.2	14.177
21	13 46 30.11	2.4267	16 21 16.4	14.063
22	13 48 55.83	2.4307	16 35 16.8	13.947
23	13 51 21.80	2.4347	S. 16 49 10.1	13.829

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 53 48.00	2.4387	S. 17 2 56.3	13.710
1	13 56 14.44	2.4427	17 16 35.3	13.589
2	13 58 41.13	2.4468	17 30 7.0	13.466
3	14 1 8.06	2.4508	17 43 31.2	13.341
4	14 3 35.23	2.4548	17 56 47.9	13.214
5	14 6 2.64	2.4588	18 9 56.9	13.086
6	14 8 30.29	2.4628	18 22 58.2	12.957
7	14 10 58.18	2.4667	18 35 51.7	12.825
8	14 13 26.30	2.4707	18 48 37.2	12.692
9	14 15 54.66	2.4747	19 1 14.7	12.557
10	14 18 23.26	2.4786	19 13 44.1	12.421
11	14 20 52.09	2.4824	19 26 5.2	12.282
12	14 23 21.15	2.4862	19 38 17.9	12.142
13	14 25 50.44	2.4901	19 50 22.2	12.002
14	14 28 19.96	2.4939	20 2 18.1	11.860
15	14 30 49.71	2.4977	20 14 5.4	11.716
16	14 33 19.68	2.5013	20 25 44.0	11.570
17	14 35 49.87	2.5049	20 37 13.8	11.423
18	14 38 20.27	2.5085	20 48 34.8	11.275
19	14 40 50.89	2.5122	20 59 46.8	11.125
20	14 43 21.73	2.5157	21 10 49.8	10.974
21	14 45 52.77	2.5191	21 21 43.7	10.822
22	14 48 24.02	2.5225	21 32 28.4	10.668
23	14 50 55.47	2.5259	21 43 3.8	10.513
24	14 53 27.13	2.5292	S. 21 53 29.9	10.357

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 29.					MONDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 53 27.13	2.5292	S.21 53 29.9	10.357	0	15 54 54.66	2.5835	S.25 14 29.7	6.312
1	14 55 58.98	2.5324	22 3 46.6	10.199	1	15 57 29.70	2.5844	25 20 43.1	6.134
2	14 58 31.02	2.5356	22 13 53.8	10.040	2	16 0 4.79	2.5852	25 26 45.8	5.957
3	15 1 3.25	2.5387	22 23 51.4	9.880	3	16 2 39.93	2.5860	25 32 37.9	5.779
4	15 3 35.67	2.5417	22 33 39.4	9.720	4	16 5 15.11	2.5867	25 38 19.3	5.600
5	15 6 8.26	2.5446	22 43 17.8	9.558	5	16 7 50.33	2.5872	25 43 49.9	5.421
6	15 8 41.02	2.5474	22 52 46.4	9.395	6	16 10 25.57	2.5875	25 49 9.8	5.242
7	15 11 13.95	2.5503	23 2 5.2	9.231	7	16 13 0.83	2.5877	25 54 19.0	5.063
8	15 13 47.05	2.5531	23 11 14.1	9.065	8	16 15 36.10	2.5878	25 59 17.4	4.883
9	15 16 20.32	2.5558	23 20 13.0	8.898	9	16 18 11.37	2.5878	26 4 5.0	4.703
10	15 18 53.74	2.5582	23 29 1.9	8.732	10	16 20 46.64	2.5877	26 8 41.8	4.524
11	15 21 27.30	2.5606	23 37 40.8	8.564	11	16 23 21.90	2.5875	26 13 7.9	4.345
12	15 24 1.01	2.5630	23 46 9.6	8.395	12	16 25 57.14	2.5871	26 17 23.2	4.165
13	15 26 34.86	2.5652	23 54 28.2	8.225	13	16 28 32.35	2.5866	26 21 27.7	3.985
14	15 29 8.84	2.5674	24 2 36.6	8.055	14	16 31 7.53	2.5859	26 25 21.4	3.805
15	15 31 42.95	2.5695	24 10 34.8	7.884	15	16 33 42.66	2.5851	26 29 4.3	3.625
16	15 34 17.18	2.5715	24 18 22.7	7.712	16	16 36 17.74	2.5842	26 32 36.4	3.445
17	15 36 51.53	2.5734	24 26 0.2	7.538	17	16 38 52.76	2.5832	26 35 57.7	3.266
18	15 39 25.99	2.5752	24 33 27.3	7.365	18	16 41 27.72	2.5820	26 39 8.3	3.087
19	15 42 0.55	2.5768	24 40 44.0	7.191	19	16 44 2.60	2.5807	26 42 8.1	2.907
20	15 44 35.21	2.5783	24 47 50.2	7.016	20	16 46 37.40	2.5792	26 44 57.1	2.726
21	15 47 9.95	2.5797	24 54 45.9	6.841	21	16 49 12.10	2.5775	26 47 35.4	2.549
22	15 49 44.77	2.5811	25 1 31.1	6.665	22	16 51 46.70	2.5758	26 50 3.0	2.371
23	15 52 19.68	2.5824	25 8 5.7	6.488	23	16 54 21.20	2.5741	26 52 19.9	2.192
24	15 54 54.66	2.5835	S.25 14 29.7	6.312	24	16 56 55.59	2.5721	S.26 54 26.1	2.014

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	3	8	25.8
○ Full Moon, ...	11	3	49.2
☾ Last Quarter, ...	19	6	30.3
● New Moon, ...	26	2	10.3

	d	h
☾ Apogee, ...	13	1.8
☾ Perigee, ...	26	6.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	59° 27′ 3″	2526	61° 7′ 40″	2541	62° 47′ 56″	2556	64° 27′ 51″	2572
	Spica	W.	16 19 7	2283	18 5 31	2285	19 51 52	2291	21 38 4	2300
	Antares	E.	29 46 39	2220	27 58 42	2235	26 11 6	2249	24 23 51	2263
	Jupiter	E.	79 53 20	2200	78 4 52	2214	76 16 46	2229	74 29 1	2243
	α Aquilæ	E.	85 31 2	2867	83 58 1	2885	82 25 23	2905	80 53 11	2926
2	Sun	W.	72 42 7	2651	74 19 53	2666	75 57 18	2683	77 34 21	2699
	Spica	W.	30 25 31	2356	32 10 9	2369	33 54 28	2383	35 38 27	2397
	Jupiter	E.	65 35 36	2317	63 50 1	2331	62 4 47	2346	60 19 55	2362
	α Aquilæ	E.	73 19 19	3051	71 50 9	3081	70 21 36	3112	68 53 41	3144
	Fomalhaut	E.	97 6 52	2692	95 30 2	2706	93 53 30	2719	92 17 16	2733
3	Sun	W.	85 34 12	2779	87 9 7	2796	88 43 40	2812	90 17 52	2828
	Spica	W.	44 13 25	2467	45 55 25	2481	47 37 5	2495	49 18 25	2510
	Jupiter	E.	51 41 2	2437	49 58 20	2452	48 15 59	2467	46 33 59	2481
	α Aquilæ	E.	61 44 37	3337	60 21 8	3383	58 58 32	3431	57 36 50	3482
	Fomalhaut	E.	84 21 0	2813	82 46 49	2831	81 13 1	2848	79 39 36	2867
	α Pegasi	E.	106 8 12	2643	104 30 16	2655	102 52 36	2668	101 15 13	2680
4	Sun	W.	98 3 51	2905	99 36 4	2920	101 7 57	2935	102 39 32	2949
	Spica	W.	57 40 11	2579	59 19 35	2593	60 58 40	2606	62 37 27	2619
	Antares	W.	11 46 27	2572	13 26 0	2586	15 5 14	2599	16 44 10	2612
	Jupiter	E.	38 9 2	2553	36 29 2	2566	34 49 21	2580	33 9 59	2594
	α Aquilæ	E.	51 3 39	3791	49 48 27	3867	48 34 34	3948	47 22 3	4036
	Fomalhaut	E.	71 58 41	2968	70 27 48	2989	68 57 22	3013	67 27 25	3036
	α Pegasi	E.	93 12 31	2745	91 36 51	2759	90 1 29	2772	88 26 25	2786
	Saturn	E.	100 45 29	2576	99 6 1	2590	97 26 52	2603	95 48 1	2616
5	Sun	W.	110 12 57	3019	111 42 46	3033	113 12 18	3047	114 41 33	3059
	Spica	W.	70 46 59	2682	72 24 3	2695	74 0 50	2707	75 37 21	2718
	Antares	W.	24 54 23	2676	26 31 35	2689	28 8 30	2701	29 45 9	2713
	Fomalhaut	E.	60 5 12	3166	58 38 22	3196	57 12 8	3226	55 46 30	3259
	α Pegasi	E.	80 35 35	2856	79 2 19	2870	77 29 22	2884	75 56 43	2898
	Saturn	E.	87 38 10	2679	86 1 2	2692	84 24 11	2704	82 47 36	2716
6	Sun	W.	122 3 59	3120	123 31 44	3132	124 59 15	3144	126 26 31	3155
	Spica	W.	83 36 11	2773	85 11 14	2784	86 46 3	2794	88 20 39	2805
	Antares	W.	37 44 35	2768	39 19 45	2779	40 54 41	2788	42 29 24	2799
	Fomalhaut	E.	48 48 30	3450	47 27 10	3497	46 6 42	3546	44 47 9	3599
	α Pegasi	E.	68 18 6	2973	66 47 19	2988	65 16 51	3003	63 46 42	3020
	Saturn	E.	74 48 34	2773	73 13 31	2783	71 38 41	2794	70 4 5	2804
	α Arietis	E.	110 15 8	2785	108 40 21	2795	107 5 47	2805	105 31 26	2815
7	Sun	W.	133 39 36	3209	135 5 35	3219	136 31 22	3229	137 56 57	3238
	Antares	W.	50 19 46	2845	51 53 15	2855	53 26 32	2863	54 59 38	2871
	Fomalhaut	E.	38 25 24	3946	37 12 51	4037	36 1 48	4139	34 52 24	4252
	α Pegasi	E.	56 21 8	3105	54 53 5	3124	53 25 25	3144	51 58 9	3166
	Saturn	E.	62 14 28	2855	60 41 12	2865	59 8 8	2874	57 35 16	2884
	α Arietis	E.	97 42 45	2861	96 9 36	2870	94 36 39	2878	93 3 52	2887
8	Antares	W.	62 42 34	2910	64 14 40	2917	65 46 37	2924	67 18 25	2931
	Jupiter	W.	13 1 34	2899	14 33 54	2905	16 6 7	2911	17 38 12	2918
	α Pegasi	E.	44 48 26	3286	43 23 58	3315	42 0 4	3346	40 36 46	3380

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	66° 7′ 25″	2587	67° 46′ 38″	2603	69° 25′ 29″	2618	71° 3′ 59″	2635
	Spica	W.	23 24 4	2309	25 9 50	2320	26 55 21	2331	28 40 35	2344
	Antares	E.	22 36 57	2278	20 50 25	2292	19 4 14	2307	17 18 25	2322
	Jupiter	E.	72 41 37	2257	70 54 34	2272	69 7 53	2286	67 21 33	2302
	α Aquilæ	E.	79 21 25	2948	77 50 7	2972	76 19 19	2997	74 49 3	3023
2	Sun	W.	79 11 2	2715	80 47 22	2732	82 23 20	2747	83 58 57	2764
	Spica	W.	37 22 6	2411	39 5 25	2424	40 48 25	2438	42 31 5	2453
	Jupiter	E.	58 35 25	2377	56 51 17	2391	55 7 30	2407	53 24 5	2422
	α Aquilæ	E.	67 26 25	3179	65 59 51	3215	64 34 0	3254	63 8 55	3294
	Fomalhaut	E.	90 41 20	2748	89 5 44	2763	87 30 28	2779	85 55 33	2796
3	Sun	W.	91 51 44	2844	93 25 15	2859	94 58 27	2874	96 31 19	2890
	Spica	W.	50 59 25	2524	52 40 5	2538	54 20 26	2551	56 0 28	2565
	Jupiter	E.	44 52 19	2496	43 11 0	2510	41 30 1	2525	39 49 22	2538
	α Aquilæ	E.	56 16 6	3536	54 56 22	3593	53 37 40	3654	52 20 4	3721
	Fomalhaut	E.	78 6 35	2886	76 33 58	2905	75 1 46	2926	73 30 0	2947
	α Pegasi	E.	99 38 6	2693	98 1 16	2706	96 24 44	2719	94 48 29	2732
4	Sun	W.	104 10 49	2964	105 41 47	2977	107 12 28	2992	108 42 51	3005
	Spica	W.	64 15 56	2632	65 54 8	2645	67 32 2	2657	69 9 39	2670
	Antares	W.	18 22 48	2626	20 1 8	2639	21 39 10	2652	23 16 55	2664
	Jupiter	E.	31 30 56	2607	29 52 11	2621	28 13 44	2634	26 35 35	2646
	α Aquilæ	E.	46 10 59	4132	45 1 28	4235	43 53 35	4347	42 47 26	4472
	Fomalhaut	E.	65 57 57	3060	64 28 59	3085	63 0 31	3111	61 32 35	3138
	α Pegasi	E.	86 51 39	2800	85 17 11	2814	83 43 1	2828	82 9 9	2842
	Saturn	E.	94 9 28	2629	92 31 13	2642	90 53 15	2655	89 15 34	2667
5	Sun	W.	116 10 33	3072	117 39 17	3084	119 7 46	3096	120 36 0	3109
	Spica	W.	77 13 37	2730	78 49 37	2741	80 25 23	2752	82 0 54	2763
	Antares	W.	31 21 32	2724	32 57 40	2735	34 33 33	2747	36 9 11	2757
	Fomalhaut	E.	54 21 31	3293	52 57 11	3329	51 33 33	3367	50 10 39	3407
	α Pegasi	E.	74 24 22	2913	72 52 20	2928	71 20 37	2943	69 49 12	2958
	Saturn	E.	81 11 17	2727	79 35 13	2739	77 59 25	2750	76 23 52	2762
6	Sun	W.	127 53 34	3166	129 20 24	3177	130 47 1	3188	132 13 25	3198
	Spica	W.	89 55 1	2814	91 29 11	2824	93 3 8	2833	94 36 53	2842
	Antares	W.	44 3 53	2809	45 38 9	2818	47 12 13	2828	48 46 5	2836
	Fomalhaut	E.	43 28 34	3657	42 11 1	3720	40 54 35	3789	39 39 21	3863
	α Pegasi	E.	62 16 54	3036	60 47 26	3053	59 18 19	3070	57 49 33	3087
	Saturn	E.	68 29 43	2814	66 55 34	2825	65 21 39	2835	63 47 57	2845
	α Arietis	E.	103 57 17	2825	102 23 21	2834	100 49 37	2843	99 16 5	2852
7	Sun	W.	139 22 21	3248	140 47 33	3258	142 12 34	3267	143 37 24	3276
	Antares	W.	56 32 34	2880	58 5 19	2887	59 37 54	2895	61 10 19	2903
	Fomalhaut	E.	33 44 47	4378	32 39 6	4522	31 35 33	4682	30 34 18	4865
	α Pegasi	E.	50 31 19	3187	49 4 54	3209	47 38 56	3233	46 13 26	3259
	Saturn	E.	56 2 37	2894	54 30 10	2903	52 57 55	2912	51 25 52	2922
	α Arietis	E.	91 31 16	2894	89 58 50	2903	88 26 35	2911	86 54 30	2918
8	Antares	W.	68 50 4	2938	70 21 35	2944	71 52 58	2951	73 24 12	2957
	Jupiter	W.	19 10 8	2924	20 41 56	2931	22 13 36	2937	23 45 8	2942
	α Pegasi	E.	39 14 7	3418	37 52 11	3458	36 31 0	3503	35 10 39	3553

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Saturn	E.	49° 54′ 1″	2931	48° 22′ 22″	2941	46° 50′ 55″	2950	45° 19′ 40″	2959
	α Arietis	E.	85 22 34	2926	83 50 48	2933	82 19 11	2940	80 47 43	2946
9	Antares	W.	74 55 19	2963	76 26 18	2969	77 57 10	2975	79 27 54	2980
	Jupiter	W.	25 16 33	2949	26 47 50	2954	28 19 0	2960	29 50 3	2965
	Saturn	E.	37 46 28	3011	36 16 29	3022	34 46 44	3034	33 17 14	3047
	α Arietis	E.	73 12 29	2980	71 41 51	2985	70 11 20	2992	68 40 57	2998
10	Antares	W.	86 59 58	3005	88 30 4	3009	90 0 5	3014	91 30 0	3019
	α Aquilæ	W.	42 57 24	4689	43 58 33	4603	45 0 55	4594	46 4 26	4453
	Jupiter	W.	37 23 37	2991	38 54 1	2996	40 24 19	3001	41 54 31	3005
	α Arietis	E.	61 10 51	3026	59 41 10	3031	58 11 36	3036	56 42 8	3041
	Aldebaran	E.	93 21 41	3074	91 53 0	3079	90 24 25	3083	88 55 55	3087
11	α Aquilæ	W.	51 36 15	4181	52 44 59	4139	53 54 23	4101	55 4 24	4066
	Jupiter	W.	49 24 13	3025	50 53 55	3029	52 23 32	3032	53 53 5	3035
	α Arietis	E.	49 16 22	3066	47 47 31	3071	46 18 46	3076	44 50 7	3080
	Aldebaran	E.	81 34 44	3109	80 6 45	3114	78 38 52	3118	77 11 4	3121
12	Jupiter	W.	61 19 53	3049	62 49 5	3052	64 18 14	3054	65 47 20	3056
	α Aquilæ	W.	61 2 8	3929	62 14 58	3908	63 28 10	3888	64 41 42	3870
	α Arietis	E.	37 28 19	3105	36 0 16	3110	34 32 19	3116	33 4 29	3123
	Aldebaran	E.	69 53 11	3141	68 25 51	3144	66 58 35	3148	65 31 24	3152
13	Jupiter	W.	73 12 20	3062	74 41 16	3064	76 10 10	3064	77 39 4	3065
	α Aquilæ	W.	70 53 33	3797	72 8 38	3786	73 23 55	3776	74 39 22	3766
	Fomalhaut	W.	45 28 29	3812	46 43 19	3778	47 58 44	3746	49 14 43	3717
	α Pegasi	W.	23 41 48	4402	24 47 7	4260	25 54 37	4139	27 4 1	4036
	Aldebaran	E.	58 16 34	3171	56 49 50	3174	55 23 10	3178	53 56 35	3183
	Pollux	E.	100 20 1	3090	98 51 39	3090	97 23 17	3091	95 54 56	3091
14	Jupiter	W.	85 3 32	3063	86 32 27	3061	88 1 24	3060	89 30 23	3058
	α Aquilæ	W.	80 58 58	3727	82 15 16	3721	83 31 41	3715	84 48 12	3711
	Fomalhaut	W.	55 41 33	3601	57 0 6	3583	58 18 59	3565	59 38 12	3546
	α Pegasi	W.	33 12 24	3693	34 29 19	3647	35 47 3	3605	37 5 32	3567
	Saturn	W.	23 29 13	3209	24 55 12	3190	26 21 33	3174	27 48 13	3159
	Aldebaran	E.	46 45 1	3207	45 19 0	3212	43 53 5	3218	42 27 17	3225
	Pollux	E.	88 33 8	3088	87 4 44	3087	85 36 18	3085	84 7 50	3084
15	Jupiter	W.	96 55 54	3046	98 25 10	3043	99 54 30	3039	101 23 55	3034
	Fomalhaut	W.	66 18 30	3477	67 39 20	3465	69 0 23	3453	70 21 40	3442
	α Pegasi	W.	43 47 3	3426	45 8 50	3403	46 31 3	3382	47 53 40	3363
	Saturn	W.	35 5 20	3106	36 33 22	3097	38 1 35	3088	39 29 59	3079
	Aldebaran	E.	35 20 40	3273	33 55 57	3288	32 31 31	3303	31 7 23	3322
	Pollux	E.	76 44 56	3071	75 16 11	3068	73 47 22	3065	72 18 29	3060
	Sun	E.	137 54 30	3441	136 33 0	3436	135 11 24	3431	133 49 43	3427
16	Fomalhaut	W.	77 11 12	3387	78 33 43	3378	79 56 25	3367	81 19 19	3358
	α Pegasi	W.	54 52 1	3277	56 16 39	3262	57 41 35	3247	59 6 48	3233
	Saturn	W.	46 54 32	3039	48 23 57	3030	49 53 33	3021	51 23 20	3013
	Pollux	E.	64 52 43	3036	63 23 15	3030	61 53 40	3024	60 23 57	3018
	Regulus	E.	101 45 35	3020	100 15 47	3014	98 45 51	3006	97 15 46	2999
	Sun	E.	126 59 47	3396	125 37 26	3390	124 14 58	3382	122 52 21	3374

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
8	Saturn	E.	43° 48′ 36″	2969	42° 17′ 44″	2979	40° 47′ 5″	2990	39° 16′ 40″	3001
	α Arietis	E.	79 16 23	2954	77 45 12	2960	76 14 9	2967	74 43 15	2973
9	Antares	W.	80 58 32	2985	82 29 3	2990	83 59 28	2996	85 29 46	3001
	Jupiter	W.	31 20 59	2971	32 51 48	2976	34 22 31	2981	35 53 7	2986
	Saturn	E.	31 47 59	3060	30 19 1	3075	28 50 21	3092	27 22 2	3110
	α Arietis	E.	67 10 42	3004	65 40 34	3009	64 10 33	3015	62 40 39	3020
10	Antares	W.	92 59 49	3023	94 29 33	3027	95 59 12	3031	97 28 46	3034
	α Aquilæ	W.	47 9 0	4388	48 14 32	4329	49 20 58	4276	50 28 13	4226
	Jupiter	W.	43 24 38	3009	44 54 40	3014	46 24 36	3018	47 54 27	3022
	α Arietis	E.	55 12 46	3047	53 43 31	3052	52 14 22	3056	50 45 19	3061
	Aldebaran	E.	87 27 30	3092	85 59 11	3096	84 30 57	3101	83 2 48	3105
11	α Aquilæ	W.	56 14 59	4034	57 26 5	4005	58 37 40	3978	59 49 41	3952
	Jupiter	W.	55 22 34	3039	56 51 59	3042	58 21 20	3044	59 50 38	3047
	α Arietis	E.	43 21 33	3085	41 53 5	3090	40 24 43	3096	38 56 28	3101
	Aldebaran	E.	75 43 20	3125	74 15 41	3129	72 48 6	3133	71 20 36	3137
12	Jupiter	W.	67 16 24	3058	68 45 25	3059	70 14 25	3060	71 43 23	3061
	α Aquilæ	W.	65 55 32	3853	67 9 40	3838	68 24 3	3823	69 38 41	3810
	α Arietis	E.	31 36 47	3129	30 9 12	3136	28 41 46	3143	27 14 29	3153
	Aldebaran	E.	64 4 17	3156	62 37 15	3159	61 10 17	3163	59 43 23	3167
13	Jupiter	W.	79 7 57	3065	80 36 50	3064	82 5 44	3064	83 34 38	3064
	α Aquilæ	W.	75 55 0	3757	77 10 47	3748	78 26 43	3741	79 42 47	3734
	Fomalhaut	W.	50 31 12	3691	51 48 9	3666	53 5 32	3642	54 23 21	3621
	α Pegasi	W.	28 15 5	3947	29 27 37	3871	30 41 26	3804	31 56 24	3745
	Aldebaran	E.	52 30 6	3187	51 3 41	3192	49 37 22	3197	48 11 9	3201
	Pollux	E.	94 26 35	3091	92 58 14	3091	91 29 53	3090	90 1 31	3089
14	Jupiter	W.	90 59 24	3056	92 28 27	3054	93 57 33	3052	95 26 42	3049
	α Aquilæ	W.	86 4 47	3707	87 21 27	3703	88 38 11	3699	89 54 59	3696
	Fomalhaut	W.	60 57 43	3533	62 17 31	3518	63 37 35	3504	64 57 55	3490
	α Pegasi	W.	38 24 42	3534	39 44 29	3503	41 4 50	3475	42 25 42	3449
	Saturn	W.	29 15 11	3147	30 42 24	3136	32 9 50	3125	33 37 29	3115
	Aldebaran	E.	41 1 38	3233	39 36 8	3241	38 10 47	3250	36 45 37	3261
	Pollux	E.	82 39 21	3082	81 10 49	3080	79 42 15	3077	78 13 37	3074
15	Jupiter	W.	102 53 25	3030	104 23 1	3026	105 52 42	3020	107 22 30	3015
	Fomalhaut	W.	71 43 9	3431	73 4 51	3419	74 26 46	3408	75 48 53	3398
	α Pegasi	W.	49 16 39	3345	50 39 59	3326	52 3 40	3309	53 27 41	3293
	Saturn	W.	40 58 34	3071	42 27 19	3063	43 56 14	3056	45 25 18	3047
	Aldebaran	E.	29 43 37	3345	28 20 17	3370	26 57 26	3400	25 35 10	3438
	Pollux	E.	70 49 31	3056	69 20 28	3052	67 51 19	3047	66 22 4	3042
	Sun	E.	132 27 57	3422	131 6 5	3415	129 44 6	3409	128 22 0	3403
16	Fomalhaut	W.	82 42 24	3348	84 5 40	3338	85 29 8	3328	86 52 47	3319
	α Pegasi	W.	60 32 18	3219	61 58 5	3204	63 24 9	3191	64 50 29	3177
	Saturn	W.	52 53 17	3004	54 23 25	2994	55 53 45	2985	57 24 17	2975
	Pollux	E.	58 54 7	3011	57 24 8	3005	55 54 1	2997	54 23 44	2989
	Regulus	E.	95 45 32	2992	94 15 9	2985	92 44 37	2977	91 13 55	2968
	Sun	E.	121 29 35	3366	120 6 40	3358	118 43 35	3348	117 20 19	3339

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L of Diff.
17	Fomalhaut	W.	88° 16′ 36″	3310	89° 40′ 36″	3300	91° 4′ 47″	3291	92° 29′ 9″	3282
	α Pegasi	W.	66 17 6	3163	67 43 59	3149	69 11 9	3136	70 38 35	3122
	Saturn	W.	58 55 1	2965	60 25 57	2955	61 57 6	2944	63 28 29	2933
	α Arietis	W.	22 46 7	3056	24 15 11	3035	25 44 40	3017	27 14 32	3000
	Pollux	E.	52 53 18	2981	51 22 42	2973	49 51 56	2965	48 20 59	2956
	Regulus	E.	89 43 2	2959	88 11 58	2950	86 40 42	2940	85 9 14	2931
	Venus	E.	95 54 25	3427	94 32 39	3415	93 10 40	3405	91 48 29	3394
	Sun	E.	115 56 53	3329	114 33 15	3319	113 9 26	3309	111 45 25	3298
18	Fomalhaut	W.	99 33 38	3238	100 59 2	3229	102 24 37	3220	103 50 22	3213
	α Pegasi	W.	77 59 58	3052	79 29 6	3039	80 58 31	3024	82 28 14	3009
	Saturn	W.	71 8 58	2874	72 41 50	2862	74 14 58	2848	75 48 23	2835
	α Arietis	W.	34 49 8	2918	36 21 4	2902	37 53 20	2887	39 25 56	2871
	Pollux	E.	40 43 25	2909	39 11 18	2900	37 38 59	2890	36 6 27	2880
	Regulus	E.	77 28 35	2874	75 55 43	2862	74 22 36	2849	72 49 12	2836
	Venus	E.	84 54 19	3333	83 30 46	3320	82 6 58	3306	80 42 53	3292
	Sun	E.	104 41 57	3236	103 16 31	3223	101 50 49	3210	100 24 52	3196
19	Saturn	W.	83 39 57	2763	85 15 13	2748	86 50 49	2732	88 26 46	2717
	α Arietis	W.	47 14 0	2791	48 48 40	2775	50 23 41	2758	51 59 4	2741
	Regulus	E.	64 57 49	2766	63 22 36	2751	61 47 4	2735	60 11 11	2719
	Venus	E.	73 38 11	3214	72 12 19	3198	70 46 8	3182	69 19 37	3164
	Sun	E.	93 10 42	3119	91 42 56	3103	90 14 50	3087	88 46 24	3069
20	Saturn	W.	96 31 50	2635	98 9 58	2618	99 48 29	2600	101 27 24	2583
	α Arietis	W.	60 1 41	2654	61 39 23	2635	63 17 30	2618	64 56 1	2599
	Aldebaran	W.	29 12 36	2920	30 44 30	2876	32 17 19	2835	33 51 1	2798
	Regulus	E.	52 6 25	2637	50 28 20	2620	48 49 52	2602	47 11 0	2585
	Venus	E.	62 1 44	3075	60 33 4	3056	59 4 0	3037	57 34 33	3018
	Sun	E.	81 18 51	2980	79 48 13	2962	78 17 12	2942	76 45 47	2924
21	α Arietis	W.	73 15 0	2506	74 56 5	2487	76 37 37	2467	78 19 36	2449
	Aldebaran	W.	41 50 52	2640	43 28 53	2612	45 7 32	2585	46 46 47	2559
	Regulus	E.	38 50 33	2495	37 9 13	2477	35 27 27	2458	33 45 15	2441
	Venus	E.	50 1 19	2921	48 29 27	2902	46 57 11	2882	45 24 29	2863
	Sun	E.	69 2 34	2826	67 28 40	2807	65 54 21	2787	64 19 36	2766
22	Aldebaran	W.	55 11 47	2439	56 54 26	2417	58 37 37	2395	60 21 19	2373
	Venus	E.	37 34 52	2769	35 59 44	2751	34 24 12	2735	32 48 18	2718
	Sun	E.	56 19 18	2669	54 41 57	2650	53 4 10	2632	51 25 58	2612
23	Aldebaran	W.	69 7 17	2274	70 53 54	2257	72 40 57	2239	74 28 26	2222
	Sun	E.	43 8 44	2525	41 28 6	2510	39 47 6	2494	38 5 45	2480
28	Sun	W.	27 39 37	2380	29 23 40	2387	31 7 33	2396	32 51 13	2406
	α Aquilæ	E.	90 23 29	2674	88 46 14	2686	87 9 15	2699	85 32 34	2715
29	Sun	W.	41 25 36	2470	43 7 32	2484	44 49 8	2499	46 30 22	2515
	α Aquilæ	E.	77 35 4	2818	76 1 0	2845	74 27 30	2872	72 54 35	2901
30	Sun	W.	54 50 45	2602	56 29 37	2621	58 8 4	2639	59 46 6	2657
	α Aquilæ	E.	65 20 15	3080	63 51 41	3123	62 23 59	3169	60 57 13	3216

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Fomalhaut	W.	93° 53′ 42″	3273	95° 18′ 25″	3264	96° 43′ 19″	3255	98° 8′ 23″	3246
	α Pegasi	W.	72 6 18	3108	73 34 18	3095	75 2 34	3081	76 31 7	3066
	Saturn	W.	65 0 6	2922	66 31 57	2911	68 4 2	2899	69 36 22	2887
	α Arietis	W.	28 44 45	2980	30 15 20	2965	31 46 16	2950	33 17 32	2934
	Pollux	E.	46 49 51	2947	45 18 32	2939	43 47 2	2929	42 15 20	2919
	Regulus	E.	83 37 34	2920	82 5 40	2909	80 33 33	2898	79 1 11	2887
	Venus	E.	90 26 6	3383	89 3 30	3371	87 40 40	3359	86 17 37	3346
	Sun	E.	110 21 11	3287	108 56 44	3275	107 32 3	3262	106 7 7	3250
18	Fomalhaut	W.	105 16 16	3205	106 42 19	3198	108 8 31	3190	109 34 52	3184
	α Pegasi	W.	83 58 15	2995	85 28 34	2981	86 59 11	2966	88 30 6	2951
	Saturn	W.	77 22 5	2821	78 56 5	2807	80 30 24	2793	82 5 1	2779
	α Arietis	W.	40 58 52	2855	42 32 8	2839	44 5 45	2824	45 39 42	2808
	Pollux	E.	34 33 43	2870	33 0 46	2862	31 27 38	2852	29 54 18	2844
	Regulus	E.	71 15 31	2823	69 41 33	2809	68 7 17	2795	66 32 42	2781
	Venus	E.	79 18 32	3277	77 53 54	3262	76 28 58	3247	75 3 44	3231
	Sun	E.	98 58 38	3181	97 32 6	3167	96 5 17	3151	94 38 9	3135
19	Saturn	W.	90 3 3	2701	91 39 42	2685	93 16 42	2668	94 54 5	2652
	α Arietis	W.	53 34 49	2724	55 10 57	2707	56 47 28	2689	58 24 23	2672
	Regulus	E.	58 34 57	2704	56 58 22	2687	55 21 25	2671	53 44 6	2655
	Venus	E.	67 52 45	3147	66 25 32	3129	64 57 58	3111	63 30 2	3093
	Sun	E.	87 17 37	3052	85 48 28	3034	84 18 58	3017	82 49 6	2998
20	Saturn	W.	103 6 43	2565	104 46 26	2548	106 26 33	2530	108 7 5	2512
	α Arietis	W.	66 34 58	2580	68 14 20	2562	69 54 7	2543	71 34 21	2525
	Aldebaran	W.	35 25 31	2763	37 0 48	2730	38 36 48	2699	40 13 30	2669
	Regulus	E.	45 31 44	2566	43 52 3	2549	42 11 58	2531	40 31 28	2513
	Venus	E.	56 4 42	2999	54 34 28	2980	53 3 50	2960	51 32 47	2940
	Sun	E.	75 13 58	2904	73 41 44	2885	72 9 6	2866	70 36 3	2845
21	α Arietis	W.	80 2 1	2430	81 44 53	2411	83 28 12	2392	85 11 58	2373
	Aldebaran	W.	48 26 38	2534	50 7 4	2509	51 48 5	2485	53 29 40	2462
	Regulus	E.	32 2 38	2422	30 19 35	2405	28 36 7	2387	26 52 14	2370
	Venus	E.	43 51 23	2844	42 17 52	2825	40 43 56	2806	39 9 36	2788
	Sun	E.	62 44 24	2747	61 8 47	2727	59 32 43	2707	57 56 13	2689
22	Aldebaran	W.	62 5 32	2353	63 50 15	2333	65 35 27	2313	67 21 8	2293
	Venus	E.	31 12 2	2702	29 35 25	2688	27 58 29	2675	26 21 15	2663
	Sun	E.	49 47 20	2594	48 8 17	2577	46 28 50	2559	44 48 59	2542
23	Aldebaran	W.	76 16 20	2206	78 4 39	2190	79 53 21	2175	81 42 26	2161
	Sun	E.	36 24 3	2466	34 42 2	2453	32 59 42	2441	31 17 5	2431
28	Sun	W.	34 34 39	2417	36 17 50	2429	38 0 44	2441	39 43 20	2455
	α Aquilæ	E.	83 56 14	2732	82 20 17	2751	80 44 45	2772	79 9 40	2794
29	Sun	W.	48 11 14	2533	49 51 42	2549	51 31 47	2566	53 11 28	2584
	α Aquilæ	E.	71 22 18	2933	69 50 41	2967	68 19 47	3003	66 49 38	3040
30	Sun	W.	61 23 43	2677	63 0 54	2695	64 37 40	2715	66 14 0	2735
	α Aquilæ	E.	59 31 23	3266	58 6 32	3320	56 42 44	3378	55 20 2	3438

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	12 29 58.84	9.059	S. 3 14 22.9	−58.27	16 1.47	64.36	10 19.92	0.794
Wed.	2	12 33 36.42	9.071	3 37 40.3	58.17	16 1.75	64.41	10 38.83	0.782
Thur.	3	12 37 14.31	9.084	4 0 55.1	58.06	16 2.04	64.46	10 57.45	0.769
Frid.	4	12 40 52.48	9.098	4 24 7.0	57.93	16 2.32	64.51	11 15.77	0.756
Sat.	5	12 44 31.00	9.112	4 47 15.6	57.78	16 2.61	64.57	11 33.75	0.742
Sun.	6	12 48 9.88	9.127	5 10 20.4	57.62	16 2.89	64.62	11 51.39	0.727
Mon.	7	12 51 49.13	9.143	5 33 21.4	57.45	16 3.17	64.68	12 8.64	0.711
Tues.	8	12 55 28.79	9.160	5 56 18.1	57.26	16 3.45	64.74	12 25.49	0.694
Wed.	9	12 59 8.87	9.178	6 19 9.9	57.06	16 3.73	64.81	12 41.91	0.676
Thur.	10	13 2 49.40	9.197	6 41 56.7	56.84	16 4.01	64.88	12 57.90	0.657
Frid.	11	13 6 30.39	9.217	7 4 38.1	56.61	16 4.29	64.95	13 13.42	0.637
Sat.	12	13 10 11.86	9.238	7 27 13.9	56.36	16 4.57	65.02	13 28.46	0.616
Sun.	13	13 13 53.84	9.260	7 49 43.6	56.10	16 4.84	65.10	13 42.99	0.594
Mon.	14	13 17 36.36	9.283	8 12 7.0	55.83	16 5.11	65.18	13 56.99	0.571
Tues.	15	13 21 19.43	9.306	8 34 23.6	55.54	16 5.38	65.26	14 10.43	0.548
Wed.	16	13 25 3.08	9.331	8 56 33.0	55.23	16 5.65	65.34	14 23.30	0.523
Thur.	17	13 28 47.33	9.356	9 18 34.8	54.91	16 5.91	65.42	14 35.57	0.498
Frid.	18	13 32 32.20	9.382	9 40 28.7	54.58	16 6.18	65.51	14 47.23	0.472
Sat.	19	13 36 17.70	9.409	10 2 14.2	54.22	16 6.44	65.60	14 58.25	0.445
Sun.	20	13 40 3.86	9.436	10 23 51.1	53.85	16 6.71	65.69	15 8.62	0.418
Mon.	21	13 43 50.68	9.464	10 45 19.0	53.46	16 6.97	65.79	15 18.33	0.390
Tues.	22	13 47 38.17	9.493	11 6 37.4	53.05	16 7.23	65.89	15 27.37	0.362
Wed.	23	13 51 26.35	9.523	11 27 45.8	52.63	16 7.49	65.99	15 35.72	0.333
Thur.	24	13 55 15.25	9.552	11 48 43.8	52.19	16 7.76	66.09	15 43.36	0.303
Frid.	25	13 59 4.87	9.582	12 9 31.0	51.73	16 8.02	66.20	15 50.28	0.273
Sat.	26	14 2 55.21	9.613	12 30 6.9	51.25	16 8.28	66.30	15 56.48	0.243
Sun.	27	14 6 46.29	9.644	12 50 31.3	50.76	16 8.54	66.41	16 1.94	0.212
Mon.	28	14 10 38.11	9.675	13 10 43.5	50.25	16 8.80	66.52	16 6.66	0.181
Tues.	29	14 14 30.68	9.706	13 30 43.4	49.72	16 9.06	66.63	16 10.64	0.149
Wed.	30	14 18 24.00	9.738	13 50 30.3	49.17	16 9.32	66.74	16 13.86	0.117
Thur.	31	14 22 18.04	9.770	14 10 4.0	48.61	16 9.58	66.85	16 16.30	0.085
Frid.	32	14 26 12.98	9.802	S. 14 29 23.8	−48.03	16 9.84	66.96	16 17.96	0.053

Note.—Mean Time of the Semidiameter passing may be found by subtracting $0^{s}.18$ from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to *Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	12 30 0.40	9.061	S. 3 14 33.0	−58.28	10 20.05	0.794	12 40 20.44
Wed.	2	12 33 38.03	9.073	3 37 50.6	58.18	10 38.97	0.782	12 44 17.00
Thur.	3	12 37 15.96	9.086	4 1 5.6	58.07	10 57.59	0.769	12 48 13.55
Frid.	4	12 40 54.19	9.100	4 24 17.9	57.94	11 15.91	0.756	12 52 10.10
Sat.	5	12 44 32.76	9.114	4 47 26.7	57.79	11 33.89	0.742	12 56 6.65
Sun.	6	12 48 11.68	9.129	5 10 31.8	57.63	11 51.53	0.727	13 0 3.21
Mon.	7	12 51 50.98	9.145	5 33 33.0	57.46	12 8.78	0.711	13 3 59.76
Tues.	8	12 55 30.69	9.162	5 56 29.9	57.27	12 25.63	0.694	13 7 56.32
Wed.	9	12 59 10.52	9.180	6 19 22.0	57.07	12 42.05	0.676	13 11 52.87
Thur.	10	13 2 51.39	9.199	6 42 9.0	56.85	12 58.04	0.657	13 15 49.43
Frid.	11	13 6 32.42	9.219	7 4 50.6	56.62	13 13.56	0.737	13 19 45.98
Sat.	12	13 10 13.93	9.240	7 27 26.6	56.37	13 28.60	0.616	13 23 42.53
Sun.	13	13 13 55.96	9.262	7 49 56.5	56.11	13 43.12	0.594	13 27 39.08
Mon.	14	13 17 38.52	9.285	8 12 20.0	55.84	13 57.12	0.571	13 31 35.64
Tues.	15	13 21 21.63	9.308	8 34 36.7	55.55	14 10.56	0.548	13 35 32.19
Wed.	16	13 25 5.32	9.333	8 56 46.2	55.24	14 23.43	0.523	13 39 28.75
Thur.	17	13 28 49.61	9.358	9 18 48.1	54.92	14 35.70	0.498	13 43 25.30
Frid.	18	13 32 34.51	9.384	9 40 42.1	54.58	14 47.35	0.472	13 47 21.86
Sat.	19	13 36 20.05	9.411	10 2 27.7	54.22	14 58.36	0.445	13 51 18.41
Sun.	20	13 40 6.24	9.438	10 24 4.7	53.85	15 8.73	0.418	13 55 14.97
Mon.	21	13 43 53.09	9.466	10 45 32.7	53.46	15 18.43	0.390	13 59 11.52
Tues.	22	13 47 40.61	9.495	11 6 51.1	53.05	15 27.47	0.362	14 3 8.08
Wed.	23	13 51 28.82	9.524	11 27 59.5	52.63	15 35.81	0.333	14 7 4.63
Thur.	24	13 55 17.75	9.553	11 48 57.5	52.19	15 43.44	0.303	14 11 1.19
Frid.	25	13 59 7.40	9.583	12 9 44.6	51.73	15 50.35	0.273	14 14 57.74
Sat.	26	14 2 57.76	9.614	12 30 20.5	51.25	15 56.54	0.243	14 18 54.30
Sun.	27	14 6 48.86	9.645	12 50 44.8	50.76	16 1.99	0.212	14 22 50.85
Mon.	28	14 10 40.70	9.676	13 10 57.0	50.25	16 6.71	0.181	14 26 47.41
Tues.	29	14 14 33.29	9.707	13 30 56.8	49.72	16 10.68	0.149	14 30 43.96
Wed.	30	14 18 26.63	9.739	13 50 43.6	49.17	16 13.89	0.117	14 34 40.52
Thur.	31	14 22 20.74	9.771	14 10 17.1	48.61	16 16.33	0.085	14 38 37.07
Frid.	32	14 26 15.64	9.803	S. 14 29 36.9	−48.03	16 17.99	0.053	14 42 33.63

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

— prefixed to the hourly change of declination indicates that the south declinations are increasing.

Diff. for 1 hour.
$+9^s.8565$
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ'	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	274	188 10 27.9	9 37.5	147.69	−0.40	0.0002381	−53.1	11 17 48.22
2	275	189 9 33.5	8 43.0	147.77	0.32	0.0001105	53.3	11 13 52.31
3	276	190 8 40.9	7 50.3	147.85	0.22	9.9999827	53.3	11 9 56.40
4	277	191 7 50.1	6 59.4	147.92	−0.11	.9998548	53.3	11 6 0.49
5	278	192 7 1.1	6 10.3	147.99	+0.01	.9997268	53.3	11 2 4.58
6	279	193 6 13.8	5 22.9	148.06	0.14	.9995991	53.1	10 58 8.68
7	280	194 5 28.2	4 37.2	148.14	0.26	.9994718	53.0	10 54 12.77
8	281	195 4 44.4	3 53.3	148.22	0.37	.9993450	52.8	10 50 16.86
9	282	196 4 2.5	3 11.3	148.30	0.47	.9992187	52.5	10 46 20.95
10	283	197 3 22.6	2 31.3	148.38	0.55	.9990931	52.2	10 42 25.04
11	284	198 2 44.7	1 53.3	148.46	0.60	.9989682	51.9	10 38 29.13
12	285	199 2 8.9	1 17.3	148.55	0.62	.9988441	51.5	10 34 33.22
13	286	200 1 35.1	0 43.4	148.63	0.61	.9987210	51.1	10 30 37.31
14	287	201 1 3.4	0 11.6	148.72	0.57	.9985988	50.7	10 26 41.41
15	288	201 60 33.9	59 42.0	148.81	0.51	.9984775	50.4	10 22 45.50
16	289	202 60 6.6	59 14.6	148.91	0.42	.9983569	50.1	10 18 49.60
17	290	203 59 41.7	58 49.5	149.01	0.30	.9982370	49.9	10 14 53.69
18	291	204 59 19.1	58 26.8	149.11	0.17	.9981175	49.6	10 10 57.78
19	292	205 58 58.8	58 6.4	149.20	+0.03	.9979988	49.4	10 7 1.87
20	293	206 58 40.8	57 48.3	149.30	−0.11	.9978805	49.2	10 3 5.96
21	294	207 58 25.0	57 32.4	149.39	0.24	.9977625	49.1	9 59 10.05
22	295	208 58 11.4	57 18.6	149.48	0.35	.9976448	49.0	9 55 14.14
23	296	209 58 0.0	57 7.1	149.57	0.45	.9975273	48.9	9 51 18.23
24	297	210 57 50.8	56 57.8	149.66	0.53	.9974099	48.9	9 47 22.32
25	298	211 57 43.7	56 50.6	149.75	0.58	.9972927	48.8	9 43 26.41
26	299	212 57 38.6	56 45.4	149.83	0.59	.9971756	48.7	9 39 30.51
27	300	213 57 35.4	56 42.0	149.90	0.57	.9970587	48.6	9 35 34.60
28	301	214 57 34.0	56 40.5	149.98	0.52	.9969420	48.5	9 31 38.69
29	302	215 57 34.4	56 40.8	150.05	0.46	.9968257	48.3	9 27 42.78
30	303	216 57 36.5	56 42.8	150.12	0.37	.9967100	48.1	9 23 46.87
31	304	217 57 40.2	56 46.3	150.19	0.25	.9965947	47.9	9 19 50.96
32	305	218 57 45.5	56 51.4	150.25	−0.12	9.9964801	−47.6	9 15 55.05

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.0.

Diff. for 1 hour.
−9s.8296
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 58.3	15 50.6	58 30.2	–2.35	58 2.1	–2.32	4 27.3	2.50	4.9
2	15 43.1	15 35 9	57 34.6	2.26	57 8.1	2.16	5 26.1	2.38	5.9
3	15 29.0	15 22.6	56 42.8	2.04	56 19.2	1.90	6 21.5	2.22	6.9
4	15 16.6	15 11.2	55 57.3	1.75	55 37.3	1.59	7 12.7	2.04	7.9
5	15 6.2	15 1.8	55 19.2	1.43	55 3.0	1.27	7 59.9	1.88	8.9
6	14 57.9	14 54.6	54 48.7	1.11	54 36.3	0.95	8 43.6	1.76	9.9
7	14 51.7	14 49.3	54 25.8	0.80	54 17.1	0.66	9 24.8	1.68	10.9
8	14 47.4	14 45.9	54 10.0	0.52	54 4.6	0.39	10 4.6	1.64	11.9
9	14 44.9	14 44.2	54 0.8	0.26	53 58.4	–0.14	10 44.0	1.65	12.9
10	14 43.9	14 44.0	53 57.3	–0.03	53 57.6	+0.08	11 23.9	1.69	13.9
11	14 44.5	14 45.2	53 59.2	+0.19	54 2.1	0.29	12 5.2	1.77	14.9
12	14 46.4	14 47.9	54 6.2	0.40	54 11.6	0.51	12 48.8	1.88	15.9
13	14 49.7	14 51.9	54 18.4	0.62	54 26.6	0.74	13 35.2	2.00	16.9
14	14 54.5	14 57.6	54 36.2	0.86	54 47.3	0.99	14 24.6	2.12	17.9
15	15 1.0	15 4.9	55 0.1	1.13	55 14.4	1.26	15 16.7	2.22	18.9
16	15 9.3	15 14.1	55 30.3	1 40	55 47.9	1.54	16 10.7	2.27	19.9
17	15 19.3	15 25.0	56 7.2	1.67	56 28.0	1.80	17 5.1	2.26	20.9
18	15 31.0	15 37.5	56 50.4	1.92	57 14.1	2.03	17 59.0	2.22	21.9
19	15 44.3	15 51.3	57 38.9	2.11	58 4.6	2.17	18 51.6	2.16	22.9
20	15 58.4	16 5.5	58 30.8	2.19	58 57.1	2.17	19 42.9	2.11	23.9
21	16 12.5	16 19.2	59 22.8	2.11	59 47.4	1.99	20 33.3	2.10	24.9
22	16 25.5	16 31.1	60 10.4	1.82	60 30.9	1.59	21 23.9	2.13	25.9
23	16 35.9	16 39.6	60 48.3	1.31	61 2.0	0.98	22 15.8	2.21	26.9
24	16 42.2	16 43.5	61 11.6	+0.60	61 16.4	+0.21	23 10.2	2.33	27.9
25	16 43.5	16 42.2	61 16.5	–0.20	61 11.6	–0.61	6		28.9
26	16 39.6	16 35.7	61 1.9	1.00	60 47.7	1.36	0 7.7	2.47	0.5
27	16 30.7	16 24.7	60 29.4	1.68	60 7.5	1.95	1 8.4	2.58	1.5
28	16 18.0	16 10.6	59 42.8	2.16	59 15.8	2.31	2 10.9	2.61	2.5
29	16 2.9	15 55.0	58 47.5	2.40	58 18.4	2.43	3 12.7	2.53	3.5
30	15 47.1	15 39.3	57 49.3	2.41	57 20.7	2.34	4 11.6	2.36	4.5
31	15 31.8	15 24.7	56 53.1	2.24	56 27.0	2.11	5 6.0	2.16	5.5
32	15 18 1	15 12.0	56 2.7	–1.95	55 40.3	–1.77	5 55.6	1.97	6.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 1.					THURSDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 56 55.59	2.5721	S.26 54 26.1	2.014	0	18 55 54.54	2.3497	S.25 19 16.8	5.612
1	16 59 29.85	2.5699	26 56 21.6	1.837	1	18 58 15.33	2.3433	25 13 36.1	5.745
2	17 2 3.98	2.5677	26 58 6.5	1.660	2	19 0 35.74	2.3369	25 7 47.4	5.877
3	17 4 37.98	2.5654	26 59 40.8	1.483	3	19 2 55.76	2.3304	25 1 50.9	6.007
4	17 7 11.83	2.5628	27 1 4.5	1.307	4	19 5 15.39	2.3238	24 55 46.6	6.135
5	17 9 45.52	2.5602	27 2 17.7	1.132	5	19 7 34.62	2.3173	24 49 34.7	6.262
6	17 12 19.05	2.5574	27 3 20.3	0.956	6	19 9 53.46	2.3107	24 43 15.2	6.388
7	17 14 52.41	2.5546	27 4 12.4	0.782	7	19 12 11.90	2.3040	24 36 48.1	6.513
8	17 17 25.60	2.5516	27 4 54.1	0.608	8	19 14 29.94	2.2974	24 30 13.6	6.636
9	17 19 58.60	2.5484	27 5 25.3	0.434	9	19 16 47.59	2.2908	24 23 31.8	6.758
10	17 22 31.41	2.5452	27 5 46.2	0.261	10	19 19 4.84	2.2841	24 16 42.7	6.879
11	17 25 4.03	2.5419	27 5 56.7	−0.089	11	19 21 21.68	2.2773	24 9 46.3	6.999
12	17 27 36.44	2.5383	27 5 56.9	+0.082	12	19 23 38.12	2.2707	24 2 42.8	7.117
13	17 30 8.63	2.5347	27 5 46.9	0.252	13	19 25 54.16	2.2640	23 55 32.2	7.234
14	17 32 40.61	2.5311	27 5 26.7	0.422	14	19 28 9.80	2.2573	23 48 14.7	7.349
15	17 35 12.36	2.5272	27 4 56.2	0.592	15	19 30 25.04	2.2507	23 40 50.3	7.464
16	17 37 43.87	2.5232	27 4 15.6	0.760	16	19 32 39.88	2.2439	23 33 19.0	7.577
17	17 40 15.15	2.5192	27 3 25.0	0.927	17	19 34 54.31	2.2372	23 25 41.0	7.689
18	17 42 46.18	2.5150	27 2 24.4	1.093	18	19 37 8.34	2.2305	23 17 56.3	7.801
19	17 45 16.95	2.5108	27 1 13.8	1.260	19	19 39 21.97	2.2238	23 10 4.9	7.910
20	17 47 47.47	2.5064	26 59 53.2	1.426	20	19 41 35.20	2.2171	23 2 7.1	8.017
21	17 50 17.72	2.5019	26 58 22.7	1.590	21	19 43 48.02	2.2103	22 54 2.9	8.124
22	17 52 47.70	2.4973	26 56 42.4	1.752	22	19 46 0.44	2.2037	22 45 52.3	8.230
23	17 55 17.40	2.4927	S.26 54 52.4	1.914	23	19 48 12.46	2.1970	S.22 37 35.3	8.335
	WEDNESDAY 2.					FRIDAY 4.			
0	17 57 46.82	2.4879	S.26 52 52.7	2.076	0	19 50 24.08	2.1903	S.22 29 12.1	8.437
1	18 0 15.95	2.4830	26 50 43.3	2.236	1	19 52 35.30	2.1837	22 20 42.8	8.539
2	18 2 44.78	2.4780	26 48 24.4	2.394	2	19 54 46.12	2.1771	22 12 7.4	8.640
3	18 5 13.31	2.4729	26 45 56.0	2.552	3	19 56 56.55	2.1706	22 3 26.0	8.739
4	18 7 41.53	2.4677	26 43 18.1	2.710	4	19 59 6.59	2.1640	21 54 38.7	8.837
5	18 10 9.44	2.4625	26 40 30.8	2.866	5	20 1 16.23	2.1573	21 45 45.6	8.933
6	18 12 37.03	2.4572	26 37 34.2	3.021	6	20 3 25.47	2.1508	21 36 46.7	9.029
7	18 15 4.30	2.4518	26 34 28.3	3.175	7	20 5 34.32	2.1443	21 27 42.1	9.123
8	18 17 31.24	2.4463	26 31 13.2	3.327	8	20 7 42.79	2.1379	21 18 31.9	9.217
9	18 19 57.86	2.4408	26 27 49.0	3.479	9	20 9 50.87	2.1314	21 9 16.1	9.309
10	18 22 24.14	2.4351	26 24 15.7	3.630	10	20 11 58.56	2.1250	20 59 54.8	9.399
11	18 24 50.07	2.4293	26 20 33.4	3.780	11	20 14 5.87	2.1186	20 50 28.2	9.488
12	18 27 15.66	2.4236	26 16 42.1	3.928	12	20 16 12.79	2.1122	20 40 56.2	9.577
13	18 29 40.90	2.4177	26 12 42.0	4.074	13	20 18 19.33	2.1059	20 31 18.9	9.665
14	18 32 5.79	2.4118	26 8 33.2	4.220	14	20 20 25.50	2.0997	20 21 36.4	9.750
15	18 34 30.32	2.4058	26 4 15.6	4.366	15	20 22 31.29	2.0934	20 11 48.9	9.834
16	18 36 54.49	2.3998	25 59 49.3	4.509	16	20 24 36.71	2.0872	20 1 56.3	9.918
17	18 39 18.30	2.3938	25 55 14.5	4.651	17	20 26 41.75	2.0809	19 51 58.7	10.002
18	18 41 41.75	2.3877	25 50 31.2	4.792	18	20 28 46.42	2.0748	19 41 56.1	10.083
19	18 44 4.82	2.3814	25 45 39.4	4.932	19	20 30 50.73	2.0687	19 31 48.7	10.163
20	18 46 27.52	2.3752	25 40 39.3	5.071	20	20 32 54.67	2.0627	19 21 36.6	10.241
21	18 48 49.85	2.3690	25 35 30.9	5.209	21	20 34 58.25	2.0567	19 11 19.8	10.319
22	18 51 11.80	2.3626	25 30 14.2	5.345	22	20 37 1.47	2.0507	19 0 58.3	10.397
23	18 53 33.36	2.3562	25 24 49.5	5.479	23	20 39 4.33	2.0448	18 50 32.2	10.473
24	18 55 54.54	2.3497	S.25 19 16.8	5.612	24	20 41 6.84	2.0389	S.18 40 1.6	10.547

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 41 6.84	2.0389	S. 18 40 1.6	10.547
1	20 43 9.00	2.0331	18 29 26.6	10.620
2	20 45 10.81	2.0273	18 18 47.2	10.692
3	20 47 12.28	2.0217	18 8 3.6	10.763
4	20 49 13.41	2.0160	17 57 15.7	10.833
5	20 51 14.20	2.0103	17 46 23.6	10.902
6	20 53 14.65	2.0047	17 35 27.4	10.970
7	20 55 14.77	1.9992	17 24 27.2	11.037
8	20 57 14.56	1.9937	17 13 23.0	11.103
9	20 59 14.02	1.9883	17 2 14.8	11.168
10	21 1 13.16	1.9830	16 51 2.8	11.232
11	21 3 11.98	1.9777	16 39 47.0	11.294
12	21 5 10.49	1.9725	16 28 27.5	11.355
13	21 7 8.68	1.9673	16 17 4.4	11.416
14	21 9 6.56	1.9622	16 5 37.6	11.477
15	21 11 4.14	1.9572	15 54 7.2	11.536
16	21 13 1.42	1.9522	15 42 33.3	11.593
17	21 14 58.40	1.9472	15 30 56.0	11.649
18	21 16 55.08	1.9422	15 19 15.4	11.704
19	21 18 51.47	1.9374	15 7 31.5	11.759
20	21 20 47.57	1.9327	14 55 44.3	11.813
21	21 22 43.39	1.9280	14 43 53.9	11.866
22	21 24 38.93	1.9233	14 32 0.4	11.918
23	21 26 34.19	1.9187	S. 14 20 3.8	11.969

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 28 29.18	1.9142	S. 14 8 4.1	12.019
1	21 30 23.90	1.9097	13 56 1.5	12.068
2	21 32 18.35	1.9053	13 43 56.0	12.116
3	21 34 12.54	1.9010	13 31 47.6	12.163
4	21 36 6.47	1.8967	13 19 36 4	12.209
5	21 38 0.15	1.8925	13 7 22.5	12.254
6	21 39 53.57	1.8883	12 55 5.9	12.298
7	21 41 46.74	1.8842	12 42 46.7	12.342
8	21 43 39.68	1.8803	12 30 24.9	12.385
9	21 45 32.38	1.8764	12 18 0.5	12.427
10	21 47 24.85	1.8725	12 5 33.7	12.467
11	21 49 17.08	1.8686	11 53 4.5	12.507
12	21 51 9.08	1.8648	11 40 32.8	12.547
13	21 53 0.86	1.8612	11 27 58.8	12.585
14	21 54 52.42	1.8575	11 15 22.6	12.622
15	21 56 43.76	1.8539	11 2 44.2	12.658
16	21 58 34.89	1.8505	10 50 3.6	12.694
17	22 0 25.82	1.8471	10 37 20.9	12.729
18	22 2 16.54	1.8437	10 24 36.1	12.763
19	22 4 7.06	1.8404	10 11 49.3	12.796
20	22 5 57.39	1.8372	9 59 0.6	12.828
21	22 7 47.52	1.8339	9 46 10.0	12.859
22	22 9 37.46	1.8308	9 33 17.5	12.891
23	22 11 27.22	1.8278	9 20 23.1	12.922
24	22 13 16.80	1.8248	S. 9 7 26.9	12.951

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 13 16.80	1.8248	S. 9 7 26.9	12.951
1	22 15 6.20	1.8219	8 54 29.0	12.978
2	22 16 55.43	1.8191	8 41 29.5	13.005
3	22 18 44.50	1.8164	8 28 28.4	13.032
4	22 20 33.40	1.8137	8 15 25.7	13.057
5	22 22 22.14	1.8111	8 2 21.5	13.082
6	22 24 10.73	1.8085	7 49 15.8	13.107
7	22 25 59.16	1.8060	7 36 8.7	13.130
8	22 27 47.45	1.8036	7 23 0.2	13.153
9	22 29 35.59	1.8012	7 9 50.3	13.175
10	22 31 23.59	1.7989	6 56 39.2	13.196
11	22 33 11.46	1.7966	6 43 26.8	13.217
12	22 34 59.19	1.7944	6 30 13.2	13.237
13	22 36 46.79	1.7923	6 16 58.4	13.255
14	22 38 34.27	1.7903	6 3 42.6	13.272
15	22 40 21.63	1.7883	5 50 25.7	13.290
16	22 42 8.87	1.7864	5 37 7.8	13.307
17	22 43 56.00	1.7847	5 23 48.9	13.323
18	22 45 43.03	1.7829	5 10 29.0	13.338
19	22 47 29.95	1.7812	4 57 8.3	13.352
20	22 49 16.77	1.7795	4 43 46.8	13.366
21	22 51 3.49	1.7779	4 30 24.4	13.379
22	22 52 50.12	1.7764	4 17 1.3	13.390
23	22 54 36.66	1.7750	S. 4 3 37.6	13.401

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 56 23.12	1.7737	S. 3 50 13.2	13.412
1	22 58 9.50	1.7723	3 36 48.2	13.422
2	22 59 55.80	1.7711	3 23 22.6	13.431
3	23 1 42.03	1.7699	3 9 56.5	13.439
4	23 3 28.19	1.7688	2 56 29.9	13.447
5	23 5 14.28	1.7677	2 43 2.9	13.454
6	23 7 0.31	1.7667	2 29 35.4	13.461
7	23 8 46.29	1.7658	2 16 7.6	13.466
8	23 10 32.21	1.7649	2 2 39.5	13.470
9	23 12 18.08	1.7642	1 49 11.2	13.474
10	23 14 3.91	1.7635	1 35 42.6	13.477
11	23 15 49.70	1.7628	1 22 13.9	13.480
12	23 17 35.44	1.7621	1 8 45.0	13.482
13	23 19 21.15	1.7616	0 55 16.0	13.483
14	23 21 6.84	1.7612	0 41 47.0	13.483
15	23 22 52.50	1.7608	0 28 18.0	13.483
16	23 24 38.14	1.7605	0 14 49.0	13.482
17	23 26 23.76	1.7602	S. 0 1 20.2	13.479
18	23 28 9.36	1.7599	N. 0 12 8.5	13.477
19	23 29 54.95	1.7598	0 25 37.1	13.474
20	23 31 40.54	1.7597	0 39 5.4	13.470
21	23 33 26.12	1.7597	0 52 33.5	13.466
22	23 35 11.70	1.7597	1 6 1.3	13.460
23	23 36 57.29	1.7599	1 19 28.7	13.453
24	23 38 42.89	1.7601	N. 1 32 55.7	13.447

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 9.					FRIDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 38 42.89	1.7601	N. 1 32 55.7	13.447	0	1 4 32.73	1.8387	N.11 56 26.7	12.241
1	23 40 28.50	1.7603	1 46 22.3	13.439	1	1 6 23.14	1.8417	12 8 39.8	12.196
2	23 42 14.13	1.7606	1 59 48.4	13.431	2	1 8 13.73	1.8447	12 20 50.2	12.152
3	23 43 59.77	1.7609	2 13 14.0	13.422	3	1 10 4.50	1.8478	12 32 58.0	12.107
4	23 45 45.44	1.7613	2 26 39.1	13.412	4	1 11 55.46	1.8510	12 45 3.0	12.059
5	23 47 31.13	1.7617	2 40 3.5	13.402	5	1 13 46.62	1.8542	12 57 5.1	12.011
6	23 49 16.85	1.7623	2 53 27.3	13.391	6	1 15 37.97	1.8575	13 9 4.3	11.962
7	23 51 2.61	1.7630	3 6 50.4	13.378	7	1 17 29.52	1.8608	13 21 0.6	11.913
8	23 52 48.41	1.7637	3 20 12.7	13.366	8	1 19 21.27	1.8641	13 32 53.9	11.863
9	23 54 34.25	1.7643	3 33 34.3	13.353	9	1 21 13.21	1.8674	13 44 44.2	11.812
10	23 56 20.13	1.7651	3 46 55.1	13.339	10	1 23 5.36	1.8709	13 56 31.4	11.761
11	23 58 6.06	1.7660	4 0 15.0	13.323	11	1 24 57.72	1.8744	14 8 15.5	11.709
12	23 59 52.05	1.7670	4 13 33.9	13.308	12	1 26 50.29	1.8780	14 19 56.5	11.656
13	0 1 38.10	1.7679	4 26 51.9	13.292	13	1 28 43.08	1.8816	14 31 34.2	11.601
14	0 3 24.20	1.7688	4 40 8.9	13.274	14	1 30 36.08	1.8852	14 43 8.6	11.546
15	0 5 10.36	1.7699	4 53 24.8	13.257	15	1 32 29.30	1.8888	14 54 39.7	11.490
16	0 6 56.59	1.7712	5 6 39.7	13.238	16	1 34 22.74	1.8926	15 6 7.4	11.432
17	0 8 42.90	1.7724	5 19 53.4	13.218	17	1 36 16.41	1.8963	15 17 31.6	11.374
18	0 10 29.28	1.7737	5 33 5.9	13.198	18	1 38 10.30	1.9001	15 28 52.3	11.316
19	0 12 15.74	1.7750	5 46 17.2	13.178	19	1 40 4.42	1.9040	15 40 9.5	11.257
20	0 14 2.28	1.7763	5 59 27.2	13.157	20	1 41 58.78	1.9079	15 51 23.1	11.196
21	0 15 48.90	1.7777	6 12 36.0	13.135	21	1 43 53.37	1.9118	16 2 33.0	11.134
22	0 17 35.61	1.7793	6 25 43.4	13.111	22	1 45 48.20	1.9158	16 13 39.2	11.072
23	0 19 22.42	1.7809	N. 6 38 49.3	13.087	23	1 47 43.27	1.9198	N.16 24 41.7	11.010
	THURSDAY 10.					SATURDAY 12.			
0	0 21 9.32	1.7825	N. 6 51 53.8	13.062	0	1 49 38.58	1.9238	N.16 35 40.4	10.946
1	0 22 56.32	1.7842	7 4 56.8	13.037	1	1 51 34.13	1.9279	16 46 35.2	10.881
2	0 24 43.43	1.7860	7 17 58.3	13.012	2	1 53 29.93	1.9321	16 57 26.1	10.816
3	0 26 30.64	1.7878	7 30 58.2	12.985	3	1 55 25.98	1.9362	17 8 13.1	10.749
4	0 28 17.96	1.7897	7 43 56.5	12.957	4	1 57 22.28	1.9404	17 18 56.0	10.681
5	0 30 5.40	1.7916	7 56 53.1	12.928	5	1 59 18.83	1.9447	17 29 34.8	10.612
6	0 31 52.95	1.7935	8 9 47.9	12.898	6	2 1 15.64	1.9490	17 40 9.5	10.543
7	0 33 40.62	1.7956	8 22 40.9	12.868	7	2 3 12.71	1.9532	17 50 40.0	10.473
8	0 35 28.42	1.7977	8 35 32.1	12.838	8	2 5 10.03	1.9575	18 1 6.3	10.402
9	0 37 16.34	1.7998	8 48 21.5	12.807	9	2 7 7.61	1.9619	18 11 28.2	10.329
10	0 39 4.39	1.8020	9 1 9.0	12.775	10	2 9 5.46	1.9663	18 21 45.8	10.256
11	0 40 52.58	1.8043	9 13 54.5	12.742	11	2 11 3.57	1.9707	18 31 59.0	10.183
12	0 42 40.91	1.8067	9 26 38.0	12.708	12	2 13 1.94	1.9751	18 42 7.8	10.109
13	0 44 29.38	1.8090	9 39 19.5	12.674	13	2 15 0.58	1.9796	18 52 12.1	10.033
14	0 46 17.99	1.8114	9 51 58.9	12.638	14	2 16 59.49	1.9842	19 2 11.8	9.956
15	0 48 6.75	1.8139	10 4 36.1	12.602	15	2 18 58.68	1.9887	19 12 6.8	9.878
16	0 49 55.66	1.8164	10 17 11.1	12.565	16	2 20 58.14	1.9932	19 21 57.2	9.800
17	0 51 44.72	1.8190	10 29 43.9	12.527	17	2 22 57.87	1.9978	19 31 42.8	9.720
18	0 53 33.94	1.8217	10 42 14.4	12.489	18	2 24 57.88	2.0024	19 41 23.6	9.639
19	0 55 23.32	1.8243	10 54 42.6	12.450	19	2 26 58.16	2.0070	19 50 59.5	9.558
20	0 57 12.86	1.8271	11 7 8.4	12.409	20	2 28 58.72	2.0117	20 0 30.6	9.477
21	0 59 2.57	1.8299	11 19 31.7	12.368	21	2 30 59.56	2.0163	20 9 56.7	9.393
22	1 0 52.45	1.8328	11 31 52.5	12.327	22	2 33 0.68	2.0210	20 19 17.8	9.309
23	1 2 42.50	1.8357	11 44 10.9	12.285	23	2 35 2.08	2.0257	20 28 33.8	9.224
24	1 4 32.73	1.8387	N.11 56 26.7	12.241	24	2 37 3.76	2.0304	N.20 37 44.7	9.138

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
SUNDAY 13.								
	h	m	s	s	°	′	″	″
0	2	37	3.76	2.0304	N.20	37	44.7	9.138
1	2	39	5.73	2.0351	20	46	50.4	9.052
2	2	41	7.98	2.0398	20	55	50.9	8.963
3	2	43	10.51	2.0446	21	4	46.0	8.874
4	2	45	13.33	2.0494	21	13	35.8	8.785
5	2	47	16.44	2.0542	21	22	20.2	8.694
6	2	49	19.83	2.0589	21	30	59.1	8.602
7	2	51	23.51	2.0637	21	39	32.5	8.510
8	2	53	27.48	2.0686	21	48	0.3	8.417
9	2	55	31.74	2.0733	21	56	22.5	8.323
10	2	57	36.28	2.0781	22	4	39.0	8.228
11	2	59	41.11	2.0829	22	12	49.8	8.131
12	3	1	46.23	2.0877	22	20	54.7	8.033
13	3	3	51.64	2.0926	22	28	53.8	7.936
14	3	5	57.34	2.0974	22	36	47.0	7.837
15	3	8	3.33	2.1022	22	44	34.2	7.736
16	3	10	9.60	2.1069	22	52	15.3	7.635
17	3	12	16.16	2.1117	22	59	50.4	7.534
18	3	14	23.01	2.1166	23	7	19.4	7.432
19	3	16	30.15	2.1213	23	14	42.2	7.328
20	3	18	37.57	2.1261	23	21	58.7	7.223
21	3	20	45.28	2.1308	23	29	8.9	7.117
22	3	22	53.27	2.1356	23	36	12.7	7.011
23	3	25	1.55	2.1403	N.23	43	10.2	6.904
MONDAY 14.								
0	3	27	10.11	2.1450	N.23	50	1.2	6.796
1	3	29	18.95	2.1498	23	56	45.7	6.687
2	3	31	28.08	2.1545	24	3	23.6	6.576
3	3	33	37.49	2.1591	24	9	54.8	6.464
4	3	35	47.17	2.1637	24	16	19.3	6.353
5	3	37	57.13	2.1683	24	22	37.2	6.242
6	3	40	7.37	2.1729	24	28	48.4	6.129
7	3	42	17.88	2.1774	24	34	52.7	6.014
8	3	44	28.66	2.1820	24	40	50.0	5.898
9	3	46	39.72	2.1866	24	46	40.4	5.782
10	3	48	51.05	2.1910	24	52	23.8	5.665
11	3	51	2.64	2.1953	24	58	0.2	5.547
12	3	53	14.49	2.1997	25	3	29.5	5.429
13	3	55	26.61	2.2042	25	8	51.7	5.309
14	3	57	38.99	2.2085	25	14	6.6	5.188
15	3	59	51.63	2.2128	25	19	14.3	5.067
16	4	2	4.53	2.2171	25	24	14.7	4.946
17	4	4	17.68	2.2213	25	29	7.8	4.823
18	4	6	31.08	2.2254	25	33	53.5	4.700
19	4	8	44.73	2.2296	25	38	31.8	4.576
20	4	10	58.63	2.2337	25	43	2.6	4.450
21	4	13	12.77	2.2377	25	47	25.8	4.324
22	4	15	27.15	2.2417	25	51	41.5	4.197
23	4	17	41.77	2.2457	25	55	49.5	4.070
24	4	19	56.63	2.2496	N.25	59	49.9	3.942

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
TUESDAY 15.								
	h	m	s	s	°	′	″	″
0	4	19	56.63	2.2496	N.25	59	49.9	3.942
1	4	22	11.72	2.2533	26	3	42.6	3.813
2	4	24	27.03	2.2571	26	7	27.5	3.683
3	4	26	42.57	2.2608	26	11	4.6	3.553
4	4	28	58.33	2.2644	26	14	33.9	3.423
5	4	31	14.30	2.2680	26	17	55.4	3.292
6	4	33	30.49	2.2716	26	21	9.0	3.160
7	4	35	46.89	2.2750	26	24	14.6	3.026
8	4	38	3.49	2.2784	26	27	12.1	2.892
9	4	40	20.30	2.2818	26	30	1.6	2.758
10	4	42	37.31	2.2851	26	32	43.1	2.623
11	4	44	54.51	2.2883	26	35	16.4	2.488
12	4	47	11.91	2.2915	26	37	41.6	2.352
13	4	49	29.49	2.2945	26	39	58.6	2.215
14	4	51	47.25	2.2976	26	42	7.4	2.077
15	4	54	5.20	2.3006	26	44	7.9	1.940
16	4	56	23.32	2.3034	26	46	0.2	1.802
17	4	58	41.61	2.3062	26	47	44.1	1.663
18	5	1	0.06	2.3088	26	49	19.7	1.523
19	5	3	18.67	2.3115	26	50	46.9	1.383
20	5	5	37.44	2.3142	26	52	5.7	1.243
21	5	7	56.37	2.3167	26	53	16.1	1.103
22	5	10	15.44	2.3191	26	54	18.0	0.961
23	5	12	34.66	2.3215	N.26	55	11.4	0.818
WEDNESDAY 16.								
0	5	14	54.02	2.3237	N.26	55	56.2	0.676
1	5	17	13.51	2.3259	26	56	32.5	0.533
2	5	19	33.13	2.3280	26	57	0.2	0.391
3	5	21	52.87	2.3300	26	57	19.4	0.247
4	5	24	12.73	2.3320	26	57	29.9	+0.103
5	5	26	32.71	2.3339	26	57	31.8	−0.041
6	5	28	52.80	2.3357	26	57	25.0	0.185
7	5	31	12.99	2.3373	26	57	9.6	0.329
8	5	33	33.28	2.3390	26	56	45.5	0.475
9	5	35	53.67	2.3406	26	56	12.6	0.621
10	5	38	14.15	2.3420	26	55	31.0	0.767
11	5	40	34.71	2.3434	26	54	40.6	0.912
12	5	42	55.36	2.3447	26	53	41.5	1.058
13	5	45	16.08	2.3459	26	52	33.6	1.205
14	5	47	36.87	2.3470	26	51	16.9	1.352
15	5	49	57.72	2.3481	26	49	51.4	1.498
16	5	52	18.64	2.3491	26	48	17.1	1.645
17	5	54	39.61	2.3499	26	46	34.0	1.792
18	5	57	0.63	2.3507	26	44	42.1	1.939
19	5	59	21.70	2.3515	26	42	41.3	2.086
20	6	1	42.81	2.3521	26	40	31.7	2.233
21	6	4	3.95	2.3526	26	38	13.3	2.381
22	6	6	25.12	2.3531	26	35	46.0	2.529
23	6	8	46.32	2.3535	26	33	9.8	2.677
24	6	11	7.54	2.3538	N.26	30	24.8	2.824

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 11 7.54	2.3538	N.26 30 24.8	2.824
1	6 13 28.78	2.3541	26 27 30.9	2.972
2	6 15 50.03	2.3542	26 24 28.2	3.119
3	6 18 11.28	2.3543	26 21 16.6	3.267
4	6 20 32.54	2.3543	26 17 56.2	3.414
5	6 22 53.80	2.3542	26 14 26.9	3.562
6	6 25 15.05	2.3541	26 10 48.7	3.710
7	6 27 36.29	2.3538	26 7 1.7	3.857
8	6 29 57.51	2.3535	26 3 5.9	4.004
9	6 32 18.71	2.3532	25 59 1.2	4.152
10	6 34 39.89	2.3527	25 54 47.7	4.298
11	6 37 1.03	2.3521	25 50 25.4	4.445
12	6 39 22.14	2.3515	25 45 54.3	4.592
13	6 41 43.21	2.3508	25 41 14.4	4.738
14	6 44 4.24	2.3502	25 36 25.7	4.884
15	6 46 25.23	2.3494	25 31 28.3	5.030
16	6 48 46.17	2.3485	25 26 22.1	5.176
17	6 51 7.05	2.3475	25 21 7.2	5.321
18	6 53 27.87	2.3465	25 15 43.6	5.466
19	6 55 48.63	2.3455	25 10 11.3	5.611
20	6 58 9.33	2.3444	25 4 30.3	5.756
21	7 0 29.96	2.3432	24 58 40.6	5.900
22	7 2 50.51	2.3419	24 52 42.3	6.043
23	7 5 10.99	2.3407	N.24 46 35.4	6.187

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 7 31.39	2.3393	N.24 40 19.8	6.331
1	7 9 51.71	2.3379	24 33 55.7	6.473
2	7 12 11.94	2.3364	24 27 23.0	6.616
3	7 14 32.08	2.3349	24 20 41.8	6.757
4	7 16 52.13	2.3333	24 13 52.1	6.898
5	7 19 12.08	2.3317	24 6 54.0	7.039
6	7 21 31.93	2.3300	23 59 47.4	7.180
7	7 23 51.68	2.3283	23 52 32.4	7.320
8	7 26 11.33	2.3266	23 45 9.0	7.460
9	7 28 30.87	2.3248	23 37 37.2	7.599
10	7 30 50.30	2.3229	23 29 57.1	7.737
11	7 33 9.62	2.3211	23 22 8.8	7.874
12	7 35 28.83	2.3192	23 14 12.2	8.012
13	7 37 47.92	2.3172	23 6 7.4	8.148
14	7 40 6.89	2.3153	22 57 54.4	8.285
15	7 42 25.75	2.3133	22 49 33.2	8.421
16	7 44 44.49	2.3112	22 41 3.9	8.556
17	7 47 3.10	2.3091	22 32 26.5	8.690
18	7 49 21.58	2.3070	22 23 41.1	8.823
19	7 51 39.94	2.3049	22 14 47.7	8.957
20	7 53 58.17	2.3027	22 5 46.3	9.089
21	7 56 16.27	2.3006	21 56 37.0	9.221
22	7 58 34.24	2.2984	21 47 19.8	9.352
23	8 0 52.08	2.2962	21 37 54.8	9.482
24	8 3 9.79	2.2940	N.21 28 22.0	9.612

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 3 9.79	2.2940	N.21 28 22.0	9.612
1	8 5 27.36	2.2918	21 18 41.4	9.740
2	8 7 44.80	2.2896	21 8 53.2	9.867
3	8 10 2.11	2.2873	20 58 57.3	9.995
4	8 12 19.28	2.2650	20 48 53.8	10.122
5	8 14 36.31	2.2627	20 38 42.7	10.247
6	8 16 53.20	2.2804	20 28 24.1	10.372
7	8 19 9.96	2.2782	20 17 58.1	10.496
8	8 21 26.58	2.2759	20 7 24.6	10.620
9	8 23 43.07	2.2737	19 56 43.7	10.742
10	8 25 59.42	2.2713	19 45 55.5	10.863
11	8 28 15.63	2.2690	19 35 0.1	10.983
12	8 30 31.70	2.2667	19 23 57.5	11.103
13	8 32 47.64	2.2645	19 12 47.7	11.223
14	8 35 3.44	2.2622	19 1 30.8	11.341
15	8 37 19.10	2.2599	18 50 6.8	11.458
16	8 39 34.63	2.2577	18 38 35.8	11.574
17	8 41 50.02	2.2554	18 26 57.9	11.689
18	8 44 5.28	2.2532	18 15 13.1	11.803
19	8 46 20.41	2.2511	18 3 21.5	11.917
20	8 48 35.41	2.2488	17 51 23.1	12.030
21	8 50 50.27	2.2466	17 39 17.9	12.142
22	8 53 5.00	2.2445	17 27 6.0	12.252
23	8 55 19.61	2.2424	N.17 14 47.6	12.361

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 57 34.09	2.2403	N.17 2 22.7	12.469
1	8 59 48.44	2.2382	16 49 51.3	12.577
2	9 2 2.67	2.2362	16 37 13.4	12.684
3	9 4 16.78	2.2342	16 24 29.2	12.789
4	9 6 30.77	2.2322	16 11 38.7	12.893
5	9 8 44.64	2.2302	15 58 42.0	12.996
6	9 10 58.39	2.2282	15 45 39.2	13.098
7	9 13 12.03	2.2263	15 32 30.3	13.199
8	9 15 25.55	2.2244	15 19 15.3	13.300
9	9 17 38.96	2.2226	15 5 54.3	13.399
10	9 19 52.26	2.2208	14 52 27.4	13.497
11	9 22 5.46	2.2191	14 38 54.7	13.593
12	9 24 18.55	2.2173	14 25 16.2	13.689
13	9 26 31.54	2.2157	14 11 32.0	13.783
14	9 28 44.43	2.2141	13 57 42.2	13.877
15	9 30 57.23	2.2125	13 43 46.8	13.969
16	9 33 9.93	2.2109	13 29 45.9	14.059
17	9 35 22.54	2.2094	13 15 39.7	14.148
18	9 37 35.06	2.2080	13 1 28.1	14.237
19	9 39 47.50	2.2066	12 47 11.2	14.325
20	9 41 59.85	2.2052	12 32 49.1	14.411
21	9 44 12.12	2.2039	12 18 21.9	14.495
22	9 46 24.32	2.2027	12 3 49.7	14.579
23	9 48 36.44	2.2014	11 49 12.4	14.662
24	9 50 48.49	2.2003	N.11 34 30.2	14.743

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 50 48.49	2.2003	N.11 34 30.2	14.743
1	9 53 0.48	2.1992	11 19 43.2	14.822
2	9 55 12.40	2.1982	11 4 51.5	14.901
3	9 57 24.26	2.1972	10 49 55.1	14.978
4	9 59 36.06	2.1963	10 34 54.1	15.054
5	10 1 47.81	2.1954	10 19 48.6	15.129
6	10 3 59.51	2.1946	10 4 38.6	15.202
7	10 6 11.16	2.1938	9 49 24.3	15.274
8	10 8 22.77	2.1932	9 34 5.7	15.345
9	10 10 34.35	2.1927	9 18 42.9	15.414
10	10 12 45.89	2.1921	9 3 16.0	15.482
11	10 14 57.40	2.1916	8 47 45.1	15.548
12	10 17 8.88	2.1912	8 32 10.2	15.614
13	10 19 20.34	2.1908	8 16 31.4	15.677
14	10 21 31.78	2.1905	8 0 48.9	15.739
15	10 23 43.20	2.1903	7 45 2.7	15.800
16	10 25 54.61	2.1901	7 29 12.9	15.859
17	10 28 6.01	2.1900	7 13 19.6	15.917
18	10 30 17.41	2.1900	6 57 22.9	15.973
19	10 32 28.81	2.1901	6 41 22.8	16.028
20	10 34 40.22	2.1902	6 25 19.5	16.081
21	10 36 51.63	2.1903	6 9 13.1	16.132
22	10 39 3.05	2.1906	5 53 3.6	16.183
23	10 41 14.50	2.1910	N. 5 36 51.1	16.232

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 43 25.97	2.1913	N. 5 20 35.7	16.280
1	10 45 37.46	2.1917	5 4 17.5	16.325
2	10 47 48.98	2.1923	4 47 56.7	16.368
3	10 50 0.54	2.1930	4 31 33.3	16.411
4	10 52 12.14	2.1937	4 15 7.4	16.452
5	10 54 23.78	2.1944	3 58 39.0	16.492
6	10 56 35.47	2.1953	3 42 8.3	16.530
7	10 58 47.22	2.1962	3 25 35.4	16.566
8	11 0 59.02	2.1972	3 9 0.4	16.600
9	11 3 10.88	2.1983	2 52 23.4	16.633
10	11 5 22.81	2.1994	2 35 44.5	16.664
11	11 7 34.81	2.2006	2 19 3.7	16.693
12	11 9 46.88	2.2018	2 2 21.3	16.720
13	11 11 59.03	2.2032	1 45 37.3	16.747
14	11 14 11.27	2.2047	1 28 51.7	16.772
15	11 16 23.60	2.2063	1 12 4.7	16.794
16	11 18 36.03	2.2079	0 55 16.4	16.814
17	11 20 48.55	2.2095	0 38 27.0	16.832
18	11 23 1.17	2.2113	0 21 36.5	16.850
19	11 25 13.90	2.2132	N. 0 4 45.0	16.866
20	11 27 26.75	2.2151	S. 0 12 7.4	16.880
21	11 29 39.71	2.2170	0 29 0.6	16.892
22	11 31 52.79	2.2191	0 45 54.4	16.901
23	11 34 6.00	2.2213	1 2 48.7	16.909
24	11 36 19.34	2.2235	S. 1 19 43.5	16.916

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 36 19.34	2.2235	S. 1 19 43.5	16.916
1	11 38 32.82	2.2258	1 36 38.6	16.920
2	11 40 46.44	2.2282	1 53 33.9	16.922
3	11 43 0.21	2.2307	2 10 29.3	16.923
4	11 45 14.12	2.2331	2 27 24.7	16.922
5	11 47 28.18	2.2357	2 44 20.0	16.920
6	11 49 42.40	2.2384	3 1 15.1	16.915
7	11 51 56.79	2.2412	3 18 9.8	16.908
8	11 54 11.35	2.2440	3 35 4.0	16.899
9	11 56 26.07	2.2468	3 51 57.7	16.888
10	11 58 40.97	2.2499	4 8 50.6	16.875
11	12 0 56.06	2.2530	4 25 42.7	16.861
12	12 3 11.33	2.2561	4 42 33.9	16.844
13	12 5 26.79	2.2593	4 59 24.0	16.825
14	12 7 42.45	2.2627	5 16 12.9	16.805
15	12 9 58.31	2.2660	5 33 0.6	16.782
16	12 12 14.37	2.2694	5 49 46.8	16.757
17	12 14 30.64	2.2728	6 6 31.5	16.731
18	12 16 47.11	2.2763	6 23 14.5	16.702
19	12 19 3.80	2.2800	6 39 55.7	16.671
20	12 21 20.71	2.2838	6 56 35.0	16.638
21	12 23 37.85	2.2876	7 13 12.3	16.603
22	12 25 55.22	2.2914	7 29 47.4	16.566
23	12 28 12.82	2.2952	S. 7 46 20.2	16.528

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 30 30.65	2.2992	S. 8 2 50.7	16.487
1	12 32 48.72	2.3032	8 19 18.6	16.443
2	12 35 7.04	2.3073	8 35 43.9	16.398
3	12 37 25.60	2.3115	8 52 6.4	16.351
4	12 39 44.42	2.3157	9 8 26.0	16.301
5	12 42 3.49	2.3200	9 24 42.5	16.249
6	12 44 22.82	2.3243	9 40 55.9	16.196
7	12 46 42.41	2.3287	9 57 6.0	16.140
8	12 49 2.27	2.3332	10 13 12.7	16.082
9	12 51 22.39	2.3377	10 29 15.9	16.022
10	12 53 42.79	2.3422	10 45 15.4	15.960
11	12 56 3.46	2.3468	11 1 11.1	15.895
12	12 58 24.41	2.3515	11 17 2.8	15.828
13	13 0 45.64	2.3562	11 32 50.5	15.760
14	13 3 7.15	2.3609	11 48 34.0	15.689
15	13 5 28.95	2.3657	12 4 13.2	15.617
16	13 7 51.03	2.3705	12 19 48.0	15.542
17	13 10 13.41	2.3754	12 35 18.2	15.465
18	13 12 36.08	2.3803	12 50 43.8	15.386
19	13 14 59.05	2.3852	13 6 4.5	15.303
20	13 17 22.31	2.3902	13 21 20.2	15.220
21	13 19 45.87	2.3952	13 36 30.9	15.134
22	13 22 9.74	2.4003	13 51 36.3	15.046
23	13 24 33.91	2.4054	14 6 36.4	14.957
24	13 26 58.39	2.4106	S.14 21 31.1	14.865

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 26 58.39	2.4106	S.14 21 31.1	14.865
1	13 29 23.18	2.4157	14 36 20.2	14.770
2	13 31 48.27	2.4208	14 51 3.5	14.673
3	13 34 13.67	2.4259	15 5 41.0	14.576
4	13 36 39.38	2.4311	15 20 12.6	14.475
5	13 39 5.40	2.4363	15 34 38.0	14.372
6	13 41 31.74	2.4416	15 48 57.2	14.267
7	13 43 58.39	2.4468	16 3 10.1	14.161
8	13 46 25.36	2.4521	16 17 16.5	14.052
9	13 48 52.64	2.4573	16 31 16.3	13.941
10	13 51 20.24	2.4626	16 45 9.4	13.827
11	13 53 48.15	2.4678	16 58 55.6	13.712
12	13 56 16.37	2.4730	17 12 34.9	13.596
13	13 58 44.91	2.4782	17 26 7.1	13.477
14	14 1 13.76	2.4835	17 39 32.1	13.355
15	14 3 42.93	2.4887	17 52 49.7	13.232
16	14 6 12.41	2.4939	18 5 59.9	13.107
17	14 8 42.20	2.4992	18 19 2.5	12.980
18	14 11 12.31	2.5043	18 31 57.5	12.852
19	14 13 42.72	2.5094	18 44 44.7	12.721
20	14 16 13.44	2.5145	18 57 24.0	12.587
21	14 18 44.46	2.5196	19 9 55.2	12.452
22	14 21 15.79	2.5247	19 22 18.3	12.316
23	14 23 47.42	2.5297	S.19 34 33.1	12.177

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 26 19.35	2.5347	S.19 46 39.6	12.037
1	14 28 51.58	2.5396	19 58 37.6	11.896
2	14 31 24.10	2.5444	20 10 27.1	11.752
3	14 33 56.91	2.5493	20 22 7.8	11.605
4	14 36 30.01	2.5541	20 33 39.7	11.458
5	14 39 3.40	2.5588	20 45 2.8	11.310
6	14 41 37.07	2.5634	20 56 16.9	11.159
7	14 44 11.01	2.5680	21 7 21.9	11.007
8	14 46 45.23	2.5726	21 18 17.7	10.853
9	14 49 19.72	2.5770	21 29 4.2	10.697
10	14 51 54.47	2.5814	21 39 41.3	10.539
11	14 54 29.49	2.5858	21 50 8.9	10.381
12	14 57 4.77	2.5901	22 0 27.0	10.221
13	14 59 40.30	2.5942	22 10 35.4	10.059
14	15 2 16.07	2.5982	22 20 34.1	9.896
15	15 4 52.08	2.6022	22 30 22.9	9.731
16	15 7 28.33	2.6061	22 40 1.8	9.565
17	15 10 4.81	2.6099	22 49 30.7	9.398
18	15 12 41.52	2.6137	22 58 49.6	9.230
19	15 15 18.45	2.6173	23 7 58.3	9.059
20	15 17 55.59	2.6207	23 16 56.7	8.888
21	15 20 32.93	2.6240	23 25 44.9	8.717
22	15 23 10.47	2.6273	23 34 22.7	8.543
23	15 25 48.21	2.6305	23 42 50.0	8.368
24	15 28 26.13	2.6335	S.23 51 6.8	8.192

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 28 26.13	2.6335	S.23 51 6.8	8.192
1	15 31 4.23	2.6364	23 59 13.0	8.015
2	15 33 42.50	2.6392	24 7 8.6	7.837
3	15 36 20.94	2.6419	24 14 53.5	7.658
4	15 38 59.53	2.6444	24 22 27.6	7.478
5	15 41 38.27	2.6468	24 29 50.9	7.298
6	15 44 17.15	2.6491	24 37 3.3	7.116
7	15 46 56.16	2.6512	24 44 4.8	6.933
8	15 49 35.30	2.6532	24 50 55.3	6.751
9	15 52 14.55	2.6551	24 57 34.9	6.568
10	15 54 53.91	2.6568	25 4 3.4	6.383
11	15 57 33.37	2.6584	25 10 20.8	6.198
12	16 0 12.92	2.6598	25 16 27.1	6.012
13	16 2 52.55	2.6611	25 22 22.2	5.825
14	16 5 32.25	2.6622	25 28 6.1	5.638
15	16 8 12.02	2.6632	25 33 38.8	5.451
16	16 10 51.84	2.6640	25 39 0.2	5.263
17	16 13 31.70	2.6647	25 44 10.3	5.075
18	16 16 11.60	2.6652	25 49 9.2	4.867
19	16 18 51.53	2.6656	25 53 56.8	4.698
20	16 21 31.47	2.6657	25 58 33.0	4.508
21	16 24 11.41	2.6657	26 2 57.8	4.319
22	16 26 51.35	2.6656	26 7 11.3	4.131
23	16 29 31.28	2.6653	S.26 11 13.5	3.942

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 32 11.19	2.6649	S.26 15 4.3	3.752
1	16 34 51.07	2.6642	26 18 43.7	3.568
2	16 37 30.90	2.6634	26 22 11.7	3.372
3	16 40 10.68	2.6625	26 25 28.4	3.183
4	16 42 50.40	2.6614	26 28 33.7	2.993
5	16 45 30.05	2.6602	26 31 27.6	2.804
6	16 48 9.62	2.6588	26 34 10.2	2.616
7	16 50 49.10	2.6572	26 36 41.5	2.427
8	16 53 28.48	2.6553	26 39 1.5	2.238
9	16 56 7.74	2.6533	26 41 10.1	2.050
10	16 58 46.88	2.6513	26 43 7.5	1.862
11	17 1 25.90	2.6491	26 44 53.6	1.674
12	17 4 4.77	2.6466	26 46 28.4	1.487
13	17 6 43.49	2.6441	26 47 52.0	1.301
14	17 9 22.06	2.6414	26 49 4.5	1.115
15	17 12 0.46	2.6385	26 50 5.8	0.929
16	17 14 38.68	2.6355	26 50 56.0	0.744
17	17 17 16.72	2.6323	26 51 35.1	0.560
18	17 19 54.56	2.6290	26 52 3.2	0.377
19	17 22 32.20	2.6255	26 52 20.3	0.193
20	17 25 9.62	2.6218	26 52 26.4	−0.011
21	17 27 46.82	2.6181	26 52 21.6	+0.170
22	17 30 23.79	2.6142	26 52 6.0	0.350
23	17 33 0.52	2.6100	26 51 39.6	0.530
24	17 35 36.99	2.6057	S.26 51 2.4	0.709

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 35 36.99	2.6057	S.26 51 2.4	0.709
1	17 38 13.20	2.6014	26 50 14.5	0.887
2	17 40 49.15	2.5970	26 49 15.9	1.064
3	17 43 24.84	2.5924	26 48 6.8	1.239
4	17 46 0.24	2.5876	26 46 47.2	1.414
5	17 48 35.35	2.5827	26 45 17.1	1.589
6	17 51 10.16	2.5776	26 43 36.5	1.762
7	17 53 44.66	2.5725	26 41 45.6	1.934
8	17 56 18.86	2.5673	26 39 44.4	2.105
9	17 58 52.74	2.5619	26 37 33.0	2.274
10	18 1 26.29	2.5564	26 35 11.5	2.442
11	18 3 59.51	2.5507	26 32 39.9	2.610
12	18 6 32.38	2.5450	26 29 58.3	2.776
13	18 9 4.91	2.5392	26 27 6.8	2.941
14	18 11 37.09	2.5333	26 24 5.4	3.106
15	18 14 8.91	2.5272	26 20 54.2	3.267
16	18 16 40.36	2.5211	26 17 33.3	3.428
17	18 19 11.44	2.5149	26 14 2.8	3.587
18	18 21 42.15	2.5087	26 10 22.8	3.746
19	18 24 12.48	2.5022	26 6 33.3	3.903
20	18 26 42.41	2.4956	26 2 34.4	4.059
21	18 29 11.95	2.4891	25 58 26.2	4.214
22	18 31 41.10	2.4825	25 54 8.7	4.367
23	18 34 9.85	2.4757	S.25 49 42.1	4.518

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 36 38.19	2.4689	S.25 45 6.5	4.668
1	18 39 6.12	2.4621	25 40 21.9	4.817
2	18 41 33.64	2.4552	25 35 28.4	4.965
3	18 44 0.74	2.4482	25 30 26.1	5.111
4	18 46 27.42	2.4411	25 25 15.1	5.256
5	18 48 53.67	2.4339	25 19 55.4	5.399
6	18 51 19.49	2.4267	25 14 27.2	5.540
7	18 53 44 88	2.4196	25 8 50.6	5.680
8	18 56 9.84	2.4124	25 3 5.6	5.819
9	18 58 34.37	2.4052	24 57 12.3	5.957
10	19 0 58.46	2.3978	24 51 10.8	6.093
11	19 3 22.10	2.3903	24 45 1.2	6.227
12	19 5 45.29	2.3828	24 38 43.6	6.359
13	19 8 8.04	2.3754	24 32 18.1	6.491
14	19 10 30.34	2.3680	24 25 44.7	6.621
15	19 12 52.20	2.3606	24 19 3.6	6.749
16	19 15 13.61	2.3530	24 12 14.8	6.876
17	19 17 34.56	2.3454	24 5 18.5	7.000
18	19 19 55.06	2.3378	23 58 14.8	7.124
19	19 22 15.10	2.3303	23 51 3.7	7.247
20	19 24 34.69	2.3228	23 43 45.2	7.368
21	19 26 53.83	2.3152	23 36 19.5	7.487
22	19 29 12.51	2.3075	23 28 46.7	7.605
23	19 31 30.73	2.2999	23 21 6.9	7.721
24	19 33 48.50	2.2923	S.23 13 20.2	7.836

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 33 48.50	2.2923	S.23 13 20.2	7.836
1	19 36 5.81	2.2848	23 5 26.6	7.949
2	19 38 22.67	2.2772	22 57 26.3	8.061
3	19 40 39.07	2.2695	22 49 19.3	8.172
4	19 42 55.01	2.2619	22 41 5.7	8.281
5	19 45 10.50	2.2544	22 32 45.6	8.388
6	19 47 25.54	2.2468	22 24 19.1	8.494
7	19 49 40.12	2.2393	22 15 46.3	8.599
8	19 51 54.25	2.2318	22 7 7.2	8.702
9	19 54 7.94	2.2244	21 58 22.0	8.804
10	19 56 21.18	2.2169	21 49 30.7	8.904
11	19 58 33.97	2.2094	21 40 33.5	9.002
12	20 0 46.31	2.2020	21 31 30.4	9.100
13	20 2 58.21	2.1947	21 22 21.5	9.197
14	20 5 9.67	2.1873	21 13 6.8	9.292
15	20 7 20.68	2.1799	21 3 46.5	9.385
16	20 9 31.26	2.1726	20 54 20.6	9.477
17	20 11 41.40	2.1653	20 44 49.3	9.567
18	20 13 51.10	2.1581	20 35 12.6	9.656
19	20 16 0.37	2.1509	20 25 30.6	9 744
20	20 18 9.21	2.1438	20 15 43.3	9.832
21	20 20 17.63	2.1367	20 5 50.8	9.917
22	20 22 25.62	2.1297	19 55 53.3	10.000
23	20 24 33.19	2.1227	S.19 45 50.8	10.082

FRIDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 26 40.34	2.1157	S.19 35 43.4	10.164

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	2	19	1.1
○ Full Moon, . . .	10	20	54.2
☾ Last Quarter, . .	18	19	9.9
● New Moon, . . .	25	10	58.5

	d	h
☾ Apogee, ...	10	3.4
☾ Perigee, ...	24	18.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	67° 49′ 54″	2753	69° 25′ 23″	2772	71° 0′ 27″	2792	72° 35′ 5″	2811
	Fomalhaut	E.	75 38 21	2800	74 3 53	2825	72 29 57	2850	70 56 34	2876
	Saturn	E.	102 37 52	2420	100 54 46	2438	99 12 6	2456	97 29 51	2473
2	Sun	W.	80 22 4	2906	81 54 15	2924	83 26 3	2943	84 57 27	2961
	Antares	W.	21 24 38	2559	23 4 29	2576	24 43 57	2593	26 23 2	2610
	Fomalhaut	E.	63 18 22	3020	61 48 34	3052	60 19 26	3085	58 50 58	3119
	α Pegasi	E.	83 54 1	2735	82 18 7	2753	80 42 38	2772	79 7 34	2791
	Saturn	E.	89 4 43	2561	87 24 54	2578	85 45 29	2595	84 6 27	2612
3	Sun	W.	92 28 54	3048	93 58 7	3065	95 26 59	3082	96 55 31	3097
	Antares	W.	34 32 47	2690	36 9 40	2706	37 46 12	2720	39 22 25	2735
	Fomalhaut	E.	51 39 32	3314	50 15 37	3359	48 52 34	3407	47 30 26	3458
	α Pegasi	E.	71 18 20	2886	69 45 43	2905	68 13 31	2925	66 41 44	2944
	Saturn	E.	75 56 55	2693	74 20 6	2709	72 43 38	2724	71 7 30	2739
4	Sun	W.	104 13 28	3173	105 40 9	3187	107 6 34	3201	108 32 42	3214
	Antares	W.	47 18 46	2804	48 53 9	2816	50 27 16	2829	52 1 6	2841
	Fomalhaut	E.	40 55 14	3774	39 39 45	3854	38 25 38	3941	37 13 0	4036
	α Pegasi	E.	59 9 1	3046	57 39 45	3068	56 10 56	3090	54 42 34	3112
	Saturn	E.	63 11 43	2811	61 37 30	2825	60 3 34	2838	58 29 56	2852
5	Sun	W.	115 39 33	3276	117 4 12	3288	118 28 37	3299	119 52 50	3310
	Antares	W.	59 46 33	2896	61 18 57	2906	62 51 8	2916	64 23 6	2925
	α Pegasi	E.	47 27 43	3236	46 2 16	3263	44 37 21	3293	43 13 1	3325
	Saturn	E.	50 45 55	2915	49 13 55	2927	47 42 10	2939	46 10 40	2950
	α Arietis	E.	88 17 27	2912	86 45 23	2922	85 13 32	2932	83 41 54	2942
6	Sun	W.	126 50 54	3359	128 13 57	3368	129 36 50	3377	130 59 33	3385
	Antares	W.	72 0 10	2967	73 31 4	2974	75 1 49	2981	76 32 25	2988
	Jupiter	W.	22 24 6	2983	23 54 40	2991	25 25 4	2998	26 55 19	3005
	Saturn	E.	38 36 55	3010	37 6 55	3022	35 37 10	3034	34 7 40	3048
	α Arietis	E.	76 6 34	2984	74 36 1	2992	73 5 38	2999	71 35 24	3006
	Aldebaran	E.	108 8 19	3041	106 38 57	3047	105 9 42	3052	103 40 34	3059
7	Antares	W.	84 3 26	3018	85 33 17	3022	87 3 2	3027	88 32 41	3031
	α Aquilæ	W.	40 57 36	4888	41 56 0	4783	42 55 50	4690	43 56 58	4604
	Jupiter	W.	34 24 36	3035	35 54 6	3039	37 23 30	3044	38 52 48	3048
	α Arietis	E.	64 6 19	3038	62 36 53	3043	61 7 33	3048	59 38 20	3053
	Aldebaran	E.	96 16 39	3085	94 48 11	3089	93 19 48	3094	91 51 31	3098
8	α Aquilæ	W.	49 19 8	4279	50 26 20	4230	51 34 18	4184	52 42 59	4142
	Jupiter	W.	46 18 1	3068	47 46 50	3071	49 15 35	3073	50 44 17	3076
	α Arietis	E.	52 13 43	3076	50 45 4	3080	49 16 30	3084	47 48 1	3087
	Aldebaran	E.	84 31 19	3117	83 3 30	3120	81 35 45	3123	80 8 3	3126
9	α Aquilæ	W.	58 35 29	3977	59 47 31	3950	61 0 0	3926	62 12 53	3904
	Jupiter	W.	58 7 6	3086	59 35 33	3087	61 3 59	3087	62 32 24	3089
	α Arietis	E.	40 26 42	3106	38 58 40	3110	37 30 43	3114	36 2 51	3118
	Aldebaran	E.	72 50 28	3140	71 23 7	3142	69 55 48	3144	68 28 32	3147
10	Jupiter	W.	69 54 13	3091	71 22 34	3091	72 50 55	3091	74 19 16	3090
	α Aquilæ	W.	68 22 31	3813	69 37 20	3798	70 52 24	3785	72 7 42	3772

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	74° 9′ 18″	2831	75° 43′ 6″	2849	77° 16′ 30″	2869	78° 49′ 29″	2887
	Fomalhaut	E.	69 23 45	2903	67 51 30	2931	66 19 51	2960	64 48 48	2989
	Saturn	E.	95 48 0	2491	94 6 34	2509	92 25 33	2526	90 44 56	2543
2	Sun	W.	86 28 29	2979	87 59 8	2997	89 29 25	3014	90 59 20	3031
	Antares	W.	28 1 43	2626	29 40 2	2643	31 17 58	2659	32 55 33	2675
	Fomalhaut	E.	57 23 11	3155	55 56 8	3192	54 29 49	3231	53 4 17	3271
	α Pegasi	E.	77 32 54	2810	75 58 39	2828	74 24 48	2848	72 51 22	2866
	Saturn	E.	82 27 48	2629	80 49 32	2645	79 11 38	2661	77 34 6	2677
3	Sun	W.	98 23 44	3114	99 51 37	3129	101 19 12	3143	102 46 29	3158
	Antares	W.	40 58 18	2750	42 33 52	2763	44 9 8	2777	45 44 6	2791
	Fomalhaut	E.	46 9 15	3513	44 49 5	3571	43 29 59	3633	42 12 0	3701
	α Pegasi	E.	65 10 21	2964	63 39 23	2984	62 8 50	3005	60 38 43	3025
	Saturn	E.	69 31 42	2754	67 56 14	2769	66 21 5	2783	64 46 15	2797
4	Sun	W.	109 58 35	3227	111 24 12	3241	112 49 33	3253	114 14 40	3265
	Antares	W.	53 34 41	2853	55 8 0	2864	56 41 5	2875	58 13 56	2886
	Fomalhaut	E.	36 1 56	4142	34 52 35	4260	33 45 5	4391	32 39 36	4538
	α Pegasi	E.	53 14 39	3134	51 47 11	3158	50 20 12	3183	48 53 42	3209
	Saturn	E.	56 56 35	2865	55 23 31	2877	53 50 43	2890	52 18 11	2902
5	Sun	W.	121 16 50	3320	122 40 38	3330	124 4 15	3340	125 27 40	3350
	Antares	W.	65 54 53	2934	67 26 29	2943	68 57 53	2951	70 29 7	2960
	α Pegasi	E.	41 49 18	3358	40 26 14	3394	39 3 51	3433	37 42 12	3475
	Saturn	E.	44 39 25	2962	43 8 25	2974	41 37 40	2986	40 7 10	2998
	α Arietis	E.	82 10 28	2951	80 39 14	2959	79 8 10	2968	77 37 17	2976
6	Sun	W.	132 22 7	3393	133 44 32	3401	135 6 47	3409	136 28 53	3416
	Antares	W.	78 2 53	2994	79 33 13	3001	81 3 25	3007	82 33 29	3013
	Jupiter	W.	28 25 26	3011	29 55 25	3017	31 25 16	3023	32 55 0	3030
	Saturn	E.	32 38 27	3062	31 9 31	3077	29 40 53	3092	28 12 34	3110
	α Arietis	E.	70 5 19	3013	68 35 22	3019	67 5 33	3026	65 35 52	3032
	Aldebaran	E.	102 11 34	3065	100 42 41	3069	99 13 54	3074	97 45 13	3080
7	Antares	W.	90 2 15	3035	91 31 44	3039	93 1 8	3043	94 30 28	3047
	α Aquilæ	W.	44 59 19	4527	46 2 47	4456	47 7 18	4393	48 12 46	4333
	Jupiter	W.	40 22 1	3053	41 51 8	3057	43 20 10	3061	44 49 8	3065
	α Arietis	E.	58 9 13	3058	56 40 12	3063	55 11 17	3067	53 42 27	3072
	Aldebaran	E.	90 23 19	3102	88 55 12	3106	87 27 10	3110	85 59 12	3114
8	α Aquilæ	W.	53 52 20	4104	55 2 18	4069	56 12 50	4035	57 23 55	4006
	Jupiter	W.	52 12 56	3078	53 41 32	3080	55 10 6	3082	56 38 37	3084
	α Arietis	E.	46 19 36	3091	44 51 16	3095	43 23 0	3099	41 54 49	3102
	Aldebaran	E.	78 40 25	3129	77 12 51	3132	75 45 20	3134	74 17 52	3138
9	α Aquilæ	W.	63 26 9	3883	64 39 46	3863	65 53 43	3846	67 7 58	3828
	Jupiter	W.	64 0 47	3090	65 29 9	3090	66 57 31	3091	68 25 52	3091
	α Arietis	E.	34 35 3	3123	33 7 21	3127	31 39 44	3133	30 12 14	3138
	Aldebaran	E.	67 1 19	3149	65 34 9	3151	64 7 1	3153	62 39 56	3156
10	Jupiter	W.	75 47 38	3089	77 16 1	3088	78 44 25	3087	80 12 50	3087
	α Aquilæ	W.	73 23 13	3761	74 38 56	3749	75 54 51	3739	77 10 57	3730

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Fomalhaut	W.	42° 57′ 54″	3900	44° 11′ 14″	3856	45° 25′ 18″	3817	46° 40′ 3″	3781
	Aldebaran	E.	61 12 54	3158	59 45 55	3161	58 18 59	3163	56 52 5	3165
	Pollux	E.	103 19 51	3088	101 51 27	3087	100 23 2	3087	98 54 36	3086
11	Jupiter	W.	81 41 16	3085	83 9 44	3083	84 38 14	3082	86 6 46	3080
	α Aquilæ	W.	78 27 12	3722	79 43 36	3713	81 0 9	3707	82 16 49	3700
	Fomalhaut	W.	53 2 17	3638	54 20 10	3616	55 38 27	3595	56 57 7	3575
	α Pegasi	W.	30 41 58	3789	31 57 12	3729	33 13 28	3677	34 30 40	3630
	Saturn	W.	22 32 37	3209	23 58 36	3188	25 24 59	3171	26 51 43	3156
	Aldebaran	E.	49 38 25	3180	48 11 52	3184	46 45 24	3189	45 19 2	3194
	Pollux	E.	91 32 9	3080	90 3 35	3078	88 34 59	3077	87 6 21	3075
12	Jupiter	W.	93 30 2	3069	94 58 50	3065	96 27 42	3063	97 56 37	3060
	Fomalhaut	W.	63 35 24	3494	64 55 55	3480	66 16 41	3467	67 37 42	3455
	α Pegasi	W.	41 7 46	3457	42 28 58	3432	43 50 38	3408	45 12 45	3386
	Saturn	W.	34 9 19	3101	35 37 27	3092	37 5 46	3084	38 34 15	3077
	Aldebaran	E.	38 8 52	3228	36 43 16	3239	35 17 53	3251	33 52 44	3264
	Pollux	E.	79 42 33	3064	78 13 39	3060	76 44 41	3058	75 15 40	3055
13	Fomalhaut	W.	74 25 58	3402	75 48 12	3393	77 10 37	3384	78 33 12	3375
	α Pegasi	W.	52 9 6	3297	53 33 21	3282	54 57 54	3267	56 22 44	3253
	Saturn	W.	45 58 52	3043	47 28 12	3035	48 57 41	3029	50 27 18	3022
	Pollux	E.	67 49 36	3038	66 20 10	3034	64 50 39	3030	63 21 3	3026
	Regulus	E.	104 42 35	3021	103 12 48	3017	101 42 56	3012	100 12 58	3007
14	Fomalhaut	W.	85 28 29	3337	86 51 58	3329	88 15 36	3323	89 39 21	3316
	α Pegasi	W.	63 30 42	3193	64 57 0	3181	66 23 32	3170	67 50 17	3159
	Saturn	W.	57 57 25	2989	59 27 52	2982	60 58 27	2975	62 29 11	2967
	α Arietis	W.	19 55 20	3112	21 23 15	3089	22 51 38	3069	24 20 26	3051
	Pollux	E.	55 51 43	3003	54 21 34	2997	52 51 18	2993	51 20 56	2987
	Regulus	E.	92 41 34	2980	91 10 56	2974	89 40 11	2968	88 9 18	2962
15	Fomalhaut	W.	96 39 57	3287	98 4 24	3281	99 28 57	3276	100 53 36	3272
	α Pegasi	W.	75 7 16	3106	76 35 18	3096	78 3 32	3086	79 31 59	3075
	Saturn	W.	70 5 16	2927	71 37 0	2920	73 8 54	2913	74 40 58	2906
	α Arietis	W.	31 49 23	2979	33 20 2	2967	34 50 56	2955	36 22 5	2943
	Pollux	E.	43 47 23	2959	42 16 19	2954	40 45 8	2948	39 13 50	2942
	Regulus	E.	80 32 46	2925	79 0 59	2918	77 29 3	2909	75 56 56	2901
	Sun	E.	134 14 32	3319	132 50 43	3309	131 26 42	3299	130 2 29	3289
16	α Pegasi	W.	86 57 24	3024	88 27 7	3013	89 57 4	3002	91 27 14	2992
	Saturn	W.	82 24 16	2855	83 57 33	2845	85 31 3	2834	87 4 47	2823
	α Arietis	W.	44 1 38	2884	45 34 17	2872	47 7 12	2860	48 40 22	2848
	Pollux	E.	31 35 34	2916	30 3 36	2913	28 31 34	2910	26 59 28	2908
	Regulus	E.	68 13 32	2854	66 40 14	2845	65 6 44	2835	63 33 1	2824
	Sun	E.	122 58 23	3235	121 32 55	3223	120 7 13	3211	118 41 17	3198
17	α Arietis	W.	56 30 13	2785	58 5 1	2771	59 40 7	2758	61 15 30	2744
	Aldebaran	W.	25 49 6	3111	27 17 2	3063	28 45 57	3020	30 15 45	2981
	Regulus	E.	55 40 47	2766	54 5 35	2753	52 30 6	2741	50 54 20	2729
	Sun	E.	111 27 52	3134	110 0 24	3120	108 32 39	3106	107 4 37	3091
18	α Arietis	W.	69 17 3	2672	70 54 20	2657	72 31 57	2643	74 9 54	2627

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Fomalhaut	W	47° 55′ 25″	3747	49° 11′ 22″	3717	50° 27′ 51″	3689	51° 44′ 50″	3663
	Aldebaran	E.	55 25 14	3168	53 58 26	3171	52 31 42	3174	51 5 2	3177
	Pollux	E.	97 26 9	3085	95 57 41	3084	94 29 12	3082	93 0 41	3082
11	Jupiter	W.	87 35 20	3078	89 3 56	3076	90 32 35	3073	92 1 17	3071
	α Aquilæ	W.	83 33 36	3694	84 50 29	3689	86 7 28	3684	87 24 32	3679
	Fomalhaut	W.	58 16 9	3556	59 35 31	3540	60 55 11	3524	62 15 9	3508
	α Pegasi	W.	35 48 42	3588	37 7 29	3550	38 26 58	3515	39 47 5	3485
	Saturn	W.	28 18 45	3143	29 46 3	3130	31 13 36	3119	32 41 22	3110
	Aldebaran	E.	43 52 46	3199	42 26 36	3205	41 0 33	3212	39 34 38	3219
	Pollux	E.	85 37 41	3073	84 8 58	3070	82 40 12	3069	81 11 24	3066
12	Jupiter	W.	99 25 36	3056	100 54 39	3053	102 23 46	3049	103 52 58	3045
	Fomalhaut	W.	68 58 56	3444	70 20 23	3432	71 42 3	3422	73 3 55	3412
	α Pegasi	W.	46 35 18	3365	47 58 14	3347	49 21 31	3329	50 45 9	3313
	Saturn	W.	40 2 53	3069	41 31 40	3062	43 0 36	3056	44 29 40	3049
	Aldebaran	E.	32 27 50	3280	31 3 15	3299	29 39 2	3320	28 15 14	3346
	Pollux	E.	73 46 35	3052	72 17 27	3049	70 48 15	3045	69 18 58	3041
13	Fomalhaut	W.	79 55 57	3367	81 18 51	3358	82 41 55	3351	84 5 8	3344
	α Pegasi	W.	57 47 50	3241	59 13 11	3228	60 38 47	3216	62 4 37	3204
	Saturn	W.	51 57 3	3016	53 26 56	3009	54 56 57	3002	56 27 7	2996
	Pollux	E.	61 51 22	3022	60 21 36	3017	58 51 44	3012	57 21 46	3008
	Regulus	E.	98 42 54	3002	97 12 44	2997	95 42 27	2992	94 12 4	2986
14	Fomalhaut	W.	91 3 14	3310	92 27 14	3303	93 51 22	3298	95 15 36	3292
	α Pegasi	W.	69 17 15	3148	70 44 26	3138	72 11 50	3127	73 39 27	3117
	Saturn	W.	64 0 5	2960	65 31 8	2952	67 2 21	2945	68 33 43	2936
	α Arietis	W.	25 49 36	3035	27 19 6	3020	28 48 54	3005	30 19 0	2992
	Pollux	E.	49 50 27	2981	48 19 51	2977	46 49 9	2971	45 18 20	2965
	Regulus	E.	86 38 17	2955	85 7 8	2948	83 35 50	2941	82 4 23	2933
15	Fomalhaut	W.	102 18 20	3268	103 43 9	3264	105 8 3	3260	106 33 1	3257
	α Pegasi	W.	81 0 39	3065	82 29 31	3055	83 58 36	3044	85 27 54	3034
	Saturn	W.	76 13 13	2894	77 45 40	2884	79 18 20	2874	80 51 12	2865
	α Arietis	W.	37 53 30	2931	39 25 10	2919	40 57 5	2908	42 29 14	2896
	Pollux	E.	37 42 24	2936	36 10 51	2931	34 39 12	2926	33 7 26	2921
	Regulus	E.	74 24 38	2892	72 52 9	2883	71 19 29	2874	69 46 37	2864
	Sun	E.	128 38 5	3279	127 13 29	3268	125 48 40	3257	124 23 38	3246
16	α Pegasi	W.	92 57 37	2981	94 28 13	2971	95 59 2	2960	97 30 5	2950
	Saturn	W.	88 38 45	2812	90 12 57	2801	91 47 24	2790	93 22 5	2778
	α Arietis	W.	50 13 48	2835	51 47 30	2823	53 21 28	2811	54 55 42	2798
	Pollux	E.	25 27 19	2908	23 55 10	2909	22 23 3	2914	20 51 2	2923
	Regulus	E.	61 59 4	2812	60 24 52	2801	58 50 25	2789	57 15 43	2778
	Sun	E.	117 15 6	3186	115 48 40	3174	114 22 0	3161	112 55 4	3148
17	α Arietis	W.	62 51 11	2730	64 27 11	2716	66 3 29	2702	67 40 6	2687
	Aldebaran	W.	31 46 22	2946	33 17 43	2912	34 49 46	2882	36 22 28	2853
	Regulus	E.	49 18 18	2716	47 41 59	2702	46 5 22	2688	44 28 26	2674
	Sun	E.	105 36 17	3077	104 7 39	3063	102 38 44	3047	101 9 30	3032
18	α Arietis	W.	75 48 12	2612	77 26 51	2596	79 5 52	2580	80 45 14	2564

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L of Diff.
18	Aldebaran	W.	37° 55′ 47″	2826	39° 29′ 41″	2800	41° 4′ 9″	2775	42° 39′ 10″	2750
	Regulus	E.	42 51 11	2660	41 13 38	2646	39 35 46	2632	37 57 34	2618
	Sun	E.	99 39 57	3016	98 10 4	3001	96 39 52	2985	95 9 20	2968
19	α Arietis	W	82 24 58	2548	84 5 5	2532	85 45 34	2515	87 26 26	2499
	Aldebaran	W	50 41 56	2640	52 19 57	2618	53 58 27	2598	55 37 25	2578
	Regulus	E.	29 41 37	2543	28 1 24	2529	26 20 51	2514	24 39 58	2499
	Sun	E.	87 31 26	2684	85 58 47	2866	84 25 45	2849	82 52 21	2831
20	Aldebaran	W.	63 59 7	2480	65 40 49	2460	67 22 58	2442	69 5 33	2424
	Pollux	W.	21 30 29	2520	23 11 14	2487	24 52 45	2457	26 34 58	2430
	Sun	E.	74 59 36	2743	73 23 53	2725	71 47 47	2707	70 11 17	2689
21	Aldebaran	W.	77 44 57	2335	79 30 6	2318	81 15 39	2301	83 1 37	2285
	Pollux	W.	35 15 0	2316	37 0 36	2296	38 46 41	2277	40 33 15	2258
	Sun	E.	62 2 56	2604	60 24 6	2588	58 44 54	2571	57 5 19	2556
22	Aldebaran	W.	91 57 10	2211	93 45 21	2197	95 33 53	2184	97 22 44	2172
	Pollux	W.	49 32 39	2174	51 21 45	2159	53 11 14	2145	55 1 5	2130
	Sun	E.	48 42 9	2482	47 0 31	2470	45 18 35	2458	43 36 22	2445
23	Pollux	W.	64 15 24	2070	66 7 10	2060	67 59 11	2050	69 51 27	2042
	Sun	E.	35 1 34	2402	33 18 2	2397	31 34 23	2393	29 50 38	2391
27	Sun	W.	22 13 59	2515	23 54 52	2515	25 35 45	2519	27 16 32	2525
	Jupiter	E.	63 29 43	2132	61 39 32	2145	59 49 41	2159	58 0 11	2174
	α Aquilæ	E.	70 26 28	2826	68 52 34	2857	67 19 20	2891	65 46 50	2928
28	Sun	W.	35 37 23	2582	37 16 42	2597	38 55 41	2612	40 34 19	2629
	Jupiter	E.	48 58 28	2253	47 11 20	2271	45 24 38	2288	43 38 21	2306
	α Aquilæ	E.	58 17 7	3158	56 50 7	3214	55 24 15	3275	53 59 34	3339
	Fomalhaut	E.	80 49 30	2594	79 10 27	2615	77 31 53	2638	75 53 50	2662
	α Pegasi	E.	102 12 50	2399	100 29 14	2414	98 45 59	2430	97 3 7	2446
29	Sun	W.	48 41 38	2719	50 17 53	2738	51 53 42	2757	53 29 6	2777
	Antares	W.	16 28 33	2365	18 12 58	2384	19 56 56	2403	21 40 26	2422
	Jupiter	E.	34 53 38	2399	33 10 2	2419	31 26 54	2438	29 44 13	2458
	α Aquilæ	E.	47 16 35	3750	46 0 41	3854	44 46 34	3967	43 34 22	4090
	Fomalhaut	E.	67 52 1	2798	66 17 30	2828	64 43 38	2860	63 10 28	2893
	α Pegasi	E.	88 34 47	2536	86 54 24	2555	85 14 27	2575	83 34 58	2595
	Saturn	E.	92 15 7	2375	90 30 56	2394	88 47 13	2413	87 3 57	2432
30	Sun	W.	61 19 40	2876	62 52 30	2896	64 24 54	2915	65 56 54	2935
	Antares	W.	30 11 13	2517	31 52 3	2536	33 32 26	2555	35 12 23	2574
	Fomalhaut	E.	55 35 45	3083	54 7 14	3126	52 39 36	3172	51 12 53	3220
	α Pegasi	E.	75 24 32	2701	73 47 53	2723	72 11 44	2745	70 36 4	2767
	Saturn	E.	78 34 22	2528	76 53 48	2548	75 13 41	2567	73 34 0	2586
31	Sun	W.	73 30 40	3031	75 0 14	3051	76 29 24	3069	77 58 12	3067
	Antares	W.	43 25 49	2664	45 3 17	2681	46 40 22	2698	48 17 4	2716
	Fomalhaut	E.	44 14 36	3510	42 54 23	3581	41 35 28	3658	40 17 56	3742
	α Pegasi	E.	62 45 13	2885	61 12 35	2909	59 40 28	2934	58 8 52	2959
	Saturn	E.	65 22 6	2679	63 44 58	2698	62 8 15	2716	60 31 57	2734

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Aldebaran	W.	44° 14′ 43″	2727	45° 50′ 47″	2704	47° 27′ 21″	2683	49° 4′ 24″	2661
	Regulus	E.	36 19 3	2603	34 40 12	2588	33 1 1	2573	31 21 29	2558
	Sun	E.	93 38 27	2951	92 7 13	2935	90 35 39	2918	89 3 43	2901
19	α Arietis	W.	89 7 41	2482	90 49 19	2466	92 31 20	2449	94 13 45	2433
	Aldebaran	W.	57 16 50	2558	58 56 43	2538	60 37 4	2518	62 17 52	2499
	Regulus	E.	22 58 44	2485	21 17 10	2472	19 35 18	2460	17 53 8	2449
	Sun	E.	81 18 34	2814	79 44 24	2796	78 9 51	2779	76 34 55	2761
20	Aldebaran	W.	70 48 34	2405	72 32 1	2387	74 15 54	2369	76 0 13	2352
	Pollux	W.	28 17 50	2405	30 1 18	2381	31 45 20	2359	33 29 54	2337
	Sun	E.	68 34 23	2672	66 57 6	2655	65 19 26	2638	63 41 23	2621
21	Aldebaran	W.	84 47 58	2269	86 34 43	2254	88 21 50	2239	90 9 19	2225
	Pollux	W.	42 20 16	2240	44 7 44	2223	45 55 37	2206	47 43 56	2190
	Sun	E.	55 25 23	2540	53 45 5	2525	52 4 27	2510	50 23 28	2496
22	Aldebaran	W.	99 11 54	2161	101 1 21	2149	102 51 5	2139	104 41 4	2130
	Pollux	W.	56 51 18	2117	58 41 51	2104	60 32 44	2092	62 23 55	2081
	Sun	E.	41 53 52	2435	40 11 7	2425	38 28 8	2416	36 44 56	2409
23	Pollux	W.	71 43 56	2034	73 36 38	2026	75 29 32	2019	77 22 36	2013
	Sun	E.	28 6 51	2391	26 23 4	2395	24 39 22	2401	22 55 49	2411
27	Sun	W.	28 57 10	2534	30 37 36	2544	32 17 48	2556	33 57 44	2568
	Jupiter	E.	56 11 4	2188	54 22 19	2204	52 33 58	2220	50 46 1	2237
	α Aquilæ	E.	64 15 7	2968	62 44 14	3010	61 14 14	3056	59 45 10	3105
28	Sun	W.	42 12 34	2646	43 50 26	2664	45 27 54	2682	47 4 58	2700
	Jupiter	E.	41 52 31	2325	40 7 8	2343	38 22 11	2362	36 37 41	2380
	α Aquilæ	E.	52 36 8	3409	51 14 2	3485	49 53 21	3566	48 34 10	3655
	Fomalhaut	E.	74 16 19	2687	72 39 21	2713	71 2 58	2740	69 27 11	2768
	α Pegasi	E.	95 20 38	2463	93 38 33	2480	91 56 52	2499	90 15 37	2517
29	Sun	W.	55 4 4	2797	56 38 36	2816	58 12 43	2836	59 46 24	2855
	Antares	W.	23 23 29	2441	25 6 5	2460	26 48 14	2479	28 29 57	2498
	Jupiter	E.	28 2 0	2477	26 20 14	2496	24 38 55	2515	22 58 3	2533
	α Aquilæ	E.	42 24 11	4226	41 16 9	4374	40 10 24	4538	39 7 5	4717
	Fomalhaut	E.	61 38 0	2928	60 6 16	2964	58 35 18	3001	57 5 7	3041
	α Pegasi	E.	81 55 56	2615	80 17 22	2637	78 39 17	2657	77 1 40	2679
	Saturn	E.	85 21 8	2451	83 38 46	2470	81 56 51	2489	80 15 23	2509
30	Sun	W.	67 28 28	2955	68 59 37	2974	70 30 22	2993	72 0 43	3013
	Antares	W.	36 51 54	2592	38 31 0	2610	40 9 41	2629	41 47 57	2646
	Fomalhaut	E.	49 47 7	3271	48 22 21	3325	46 58 39	3383	45 36 3	3444
	α Pegasi	E.	69 0 53	2790	67 26 12	2814	65 52 2	2837	64 18 22	2861
	Saturn	E.	71 54 46	2605	70 15 58	2624	68 37 35	2643	66 59 38	2661
31	Sun	W.	79 26 37	3105	80 54 41	3123	82 22 23	3139	83 49 45	3157
	Antares	W.	49 53 23	2732	51 29 20	2748	53 4 56	2764	54 40 11	2780
	Fomalhaut	E.	39 1 53	3832	37 47 24	3930	36 34 35	4040	35 23 35	4161
	α Pegasi	E.	56 37 48	2985	55 7 16	3011	53 37 17	3038	52 7 51	3066
	Saturn	E.	58 56 3	2752	57 20 32	2769	55 45 24	2787	54 10 39	2804

NOVEMBER, 1878.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	14 26 12.98	9.802	S. 14 29 23.8	−48.03	16 9.84	66.96	16 17.96	0.053
Sat.	2	14 30 8.66	9.836	14 48 29.7	47.44	16 10.09	67.08	16 18.84	−0.020
Sun.	3	14 34 5.12	9.869	15 7 21.0	46.83	16 10.34	67.19	16 18.94	+0.013
Mon.	4	14 38 2.37	9.903	15 25 57.3	46.20	16 10.59	67.31	16 18.25	0.046
Tues.	5	14 42 0.43	9.937	15 44 18.3	45.55	16 10.84	67.43	16 16.75	0.080
Wed.	6	14 45 59.31	9.971	16 2 23.6	44.89	16 11.08	67.55	16 14.43	0.114
Thur.	7	14 49 59.01	10.005	16 20 12.9	44.21	16 11.32	67.67	16 11.29	0.148
Frid.	8	14 53 59.54	10.040	16 37 45.7	43.51	16 11.55	67.79	16 7.32	0.183
Sat.	9	14 58 0.91	10.075	16 55 1.7	42.80	16 11.78	67.91	16 2.52	0.218
Sun.	10	15 2 3.12	10.110	17 12 0.4	42.07	16 12.01	68.03	15 56.88	0.253
Mon.	11	15 6 6.19	10.146	17 28 41.3	41.33	16 12.23	68.15	15 50.39	0.288
Tues.	12	15 10 10.12	10.183	17 45 4.3	40.57	16 12.45	68.27	15 43.04	0.324
Wed.	13	15 14 14.92	10.219	18 1 9.0	39.80	16 12.66	68.39	15 34.82	0.360
Thur.	14	15 18 20.57	10.254	18 16 54.9	39.01	16 12.87	68.51	15 25.74	0.396
Frid.	15	15 22 27.09	10.290	18 32 21.6	38.20	16 13.08	68.63	15 15.81	0.432
Sat.	16	15 26 34.48	10.325	18 47 28.8	37.38	16 13.28	68.74	15 5.01	0.468
Sun.	17	15 30 42.73	10.361	19 2 16.0	36.54	16 13.48	68.86	14 53.34	0.504
Mon.	18	15 34 51.84	10.396	19 16 42.7	35.68	16 13.67	68.97	14 40.83	0.539
Tues.	19	15 39 1.80	10.431	19 30 48.7	34.80	16 13.87	69.09	14 27.48	0.574
Wed.	20	15 43 12.59	19.466	19 44 33.5	33.91	16 14.06	69.20	14 13.28	0.609
Thur.	21	15 47 24.21	10.500	19 57 56.8	33.01	16 14.25	69.31	13 58.25	0.643
Frid.	22	15 51 36.65	10.534	20 10 58.1	32.09	16 14.44	69.42	13 42.42	0.677
Sat.	23	15 55 49.89	10.567	20 23 37.3	31.16	16 14.62	69.53	13 25.78	0.710
Sun.	24	16 0 3.92	10.599	20 35 53.9	30.21	16 14.80	69.63	13 8.35	0.742
Mon.	25	16 4 18.73	10.632	20 47 47.6	29.25	16 14.98	69.73	12 50.15	0.773
Tues.	26	16 8 34.29	10.663	20 59 17.7	28.26	16 15.15	69.83	12 31.19	0.804
Wed.	27	16 12 50.57	10.693	21 10 24.1	27.26	16 15.32	69.93	12 11.52	0.834
Thur.	28	16 17 7.56	10.722	21 21 6.5	26.25	16 15.49	70.03	11 51.15	0.863
Frid.	29	16 21 25.24	10.750	21 31 24.7	25.23	16 15.66	70.13	11 30.09	0.891
Sat.	30	16 25 43.58	10.777	21 41 18.2	24.20	16 15.82	70.22	11 8.36	0.919
Sun.	31	16 30 2.56	10.803	S. 21 50 46.7	−23.16	16 15.98	70.31	10 46.00	0.946

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0ˢ.19 from the Sidereal Time.

— prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	14 26 15.64	9.803	S. 14 29 36.9	–48.03	16 17.99	0.053	14 42 33.63
Sat.	2	14 30 11.33	9.836	14 48 42.6	47.43	16 18.85	+0.020	14 46 30.18
Sun.	3	14 34 7.80	9.869	15 7 33.7	46.82	16 18.94	+0.013	14 50 26.74
Mon.	4	14 38 5.06	9.903	15 26 9.8	46.19	16 18.24	0.046	14 54 23.29
Tues.	5	14 42 3.12	9.937	15 44 30.6	45.54	16 16.73	0.080	14 58 19.85
Wed.	6	14 46 2.00	9.971	16 2 35.7	44.88	16 14.40	0.114	15 2 16.40
Thur.	7	14 50 1.71	10.005	16 20 24.8	40.20	16 11.25	0.148	15 6 12.96
Frid.	8	14 54 2.24	10.040	16 37 57.4	43.50	16 7.27	0.183	15 10 9.51
Sat.	9	14 58 3.60	10.075	16 55 13.2	42.79	16 2.46	0.218	15 14 16.07
Sun.	10	15 2 5.81	10.110	17 12 11.5	42.06	15 56.81	0.253	15 18 2.62
Mon.	11	15 6 8.87	10.146	17 28 52.2	41.32	15 50.31	0.288	15 21 59.18
Tues.	12	15 10 12.79	10.182	17 45 15.0	40.56	15 42.95	0.324	15 25 55.74
Wed.	13	15 14 17.57	10.218	18 1 19.3	39.79	15 34.73	0.360	15 29 52.30
Thur.	14	15 18 23.21	10.253	18 17 4.9	39.00	15 25.64	0.396	15 33 48.85
Frid.	15	15 22 29.71	10.289	18 32 31.2	38.19	15 15.70	0.432	15 37 45.41
Sat.	16	15 26 37.07	10.324	18 47 38.1	37.37	15 4.89	0.468	15 41 41.96
Sun.	17	15 30 45.30	10.360	19 2 25.0	36.53	14 53.22	0.504	15 45 38.52
Mon.	18	15 34 54.38	10.395	19 16 51.4	35.67	14 40.70	0.539	15 49 35.08
Tues.	19	15 39 4.30	10.430	19 30 57.1	34.79	14 27.34	0.574	15 53 31.64
Wed.	20	15 43 15.06	10.465	19 44 41.6	33.90	14 13.13	0.609	15 57 28.19
Thur.	21	15 47 26.65	10.499	19 58 4.5	33.00	13 58.10	0.643	16 1 24.75
Frid.	22	15 51 39.05	10.533	20 11 5.5	32.08	13 42.26	0.677	16 5 21.31
Sat.	23	15 55 52.25	10.566	20 23 44.3	31.15	13 25.62	0.710	16 9 17.87
Sun.	24	16 0 6.24	10.598	20 36 0.5	30.20	13 8.18	0.742	16 13 14.42
Mon.	25	16 4 21.00	10.630	20 47 53.8	29.24	12 49.98	0.773	16 17 10.98
Tues.	26	16 8 36.51	10.661	20 59 23.6	28.25	12 31.02	0.804	16 21 7.53
Wed.	27	16 12 52.74	10.691	21 10 29.7	27.25	12 11.35	0.834	16 25 4.09
Thur.	28	16 17 9.67	10.720	21 21 11.8	26.24	11 50.98	0.863	16 29 0.65
Frid.	29	16 21 27.30	10.748	21 31 29.6	25.22	11 29.91	0.891	16 32 57.21
Sat.	30	16 25 45.58	10.775	21 41 22.7	24.19	11 8.19	0.919	16 36 53.77
Sun.	31	16 30 4.50	10.801	S. 21 50 50.8	–23.15	10 45.83	0.946	16 40 50.33

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

– prefixed to the hourly change of declination indicates that the south declinations are increasing.

Diff. for 1 hour.
$+9^s.8565$
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	305	218 57 45.5	56 51.4	150.25	−0.12	9.9964801	−47.6	9 15 55.05
2	306	219 57 52.4	56 58.2	150.32	+0.01	.9963663	47.2	9 11 59.14
3	307	220 58 0.9	57 6.6	150.38	0.14	.9962536	46.7	9 8 3.23
4	308	221 58 10.9	57 16.5	150.45	0.26	.9961421	46.1	9 4 7.32
5	309	222 58 22.4	57 27.8	150.51	0.36	.9960320	45.5	9 0 11.41
6	310	223 58 35.5	57 40.7	150.58	0.45	.9959233	44.9	8 56 15.50
7	311	224 58 50.2	57 55.3	150.64	0.51	.9958162	44.2	8 52 19.59
8	312	225 59 6.4	58 11.4	150.71	0.53	.9957110	43.4	8 48 23.68
9	313	226 59 24.3	58 29.1	150.78	0.52	.9956075	42.7	8 44 27.77
10	314	227 59 43.9	58 48.5	150.85	0.48	.9955059	41.9	8 40 31.86
11	315	228 60 5.1	59 9.5	150.92	0.42	.9954062	41.0	8 36 35.95
12	316	229 60 28.0	59 32.3	150.99	0.33	.9953085	40.3	8 32 40.04
13	317	230 60 52.8	59 57.0	151.07	0.23	.9952125	39.5	8 28 44.13
14	318	232 1 19.4	0 23.4	151.15	+0.11	.9951184	38.8	8 24 48.22
15	319	233 1 47.8	0 51.6	151.22	−0.03	.9950262	38.1	8 20 52.31
16	320	234 2 18.1	1 21.7	151.30	0.17	.9949356	37.4	8 16 56.40
17	321	235 2 50.3	1 53.8	151.38	0.31	.9948466	36.7	8 13 0.49
18	322	236 3 24.3	2 27.7	151.45	0.43	.9947592	36.1	8 9 4.58
19	323	237 4 0.1	3 3.3	151.52	0.53	.9946733	35.5	8 5 8.67
20	324	238 4 37.6	3 40.6	151.59	0.61	.9945887	35.0	8 1 12.76
21	325	239 5 16.7	4 19.5	151.66	0.66	.9945053	34.5	7 57 16.85
22	326	240 5 57.4	5 0.1	151.73	0.68	.9944229	34.1	7 53 20.94
23	327	241 6 39.7	5 42.2	151.79	0.67	.9943417	33.6	7 49 25.02
24	328	242 7 23.5	6 25.8	151.85	0.63	.9942617	33.0	7 45 29.11
25	329	243 8 8.6	7 10.7	151.90	0.57	.9941829	32.6	7 41 33.20
26	330	244 8 54.9	7 56.8	151.95	0.48	.9941051	32.1	7 37 37.29
27	331	245 9 42.4	8 44.2	152.00	0.38	.9940285	31.6	7 33 41.38
28	332	246 10 31.0	9 32.7	152.05	0.26	.9939532	31.0	7 29 45.47
29	333	247 11 20.6	10 22.1	152.09	−0.13	.9938793	30.4	7 25 49.56
30	334	248 12 11.2	11 12.5	152.13	0.00	.9938070	29.7	7 21 53.65
31	335	249 13 2.7	12 3.8	152.16	+0.12	9.9937363	−29.0	7 17 57.73

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January $0^d.0$.

Diff. for 1 hour.
$-9^s.8296$
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 18.1	15 12.0	56 2.7	−1.95	55 40.3	−1.77	5 55.6	1.97	6.5
2	15 6.4	15 1.6	55 20.1	1.58	55 2.3	1.39	6 41.0	1.82	7.5
3	14 57.5	14 53.8	54 46.9	1.19	54 33.7	1.00	7 23.3	1.71	8.5
4	14 50.9	14 48.6	54 22.9	0.81	54 14.4	0.62	8 3.6	1.65	9.5
5	14 46.8	14 45.7	54 8.0	0.44	54 3.8	−0.27	8 43.0	1.64	10.5
6	14 45.1	14 45.0	54 1.5	−0.11	54 1.2	+0.05	9 22.6	1.67	11.5
7	14 45.3	14 46.1	54 2.5	+0.18	54 5.5	0.31	10 3.5	1.74	12.5
8	14 47.4	14 48.9	54 9.9	0.42	54 15.5	0.53	10 46.5	1.85	13.5
9	14 50.8	14 52.9	54 22.5	0.62	54 30.5	0.71	11 32.3	1.97	14.5
10	14 55.4	14 58.1	54 39.5	0.79	54 49.5	0.87	12 21.2	2.10	15.5
11	15 1.1	15 4.3	55 0.4	0.95	55 12.2	1.02	13 12.9	2.21	16.5
12	15 7.7	15 11.4	55 24.8	1.09	55 38.3	1.16	14 6.7	2.26	17.5
13	15 15.3	15 19.4	55 52.6	1.23	56 7.8	1.30	15 1.1	2.26	18.5
14	15 23.8	15 28.4	56 23.8	1.37	56 40.7	1.44	15 54.7	2.20	19.5
15	15 33.2	15 38.3	56 58.5	1.51	57 17.0	1.57	16 46.8	2.13	20.5
16	15 43.5	15 48.9	57 36.1	1.62	57 55.9	1.66	17 37.0	2.06	21.5
17	15 54.4	15 59.9	58 15.9	1.68	58 36.2	1.68	18 25.9	2.02	22.5
18	16 5.3	16 10.6	58 56.2	1.66	59 15.8	1.59	19 14.3	2.02	23.5
19	16 15.7	16 20.3	59 34.3	1.50	59 51.5	1.36	20 3.5	2.08	24.5
20	16 24.5	16 28.0	60 6.7	1.18	60 19.6	0.95	20 54.8	2.20	25.5
21	16 30.7	16 32.5	60 29.4	0.69	60 36.0	+0.39	21 49.3	2.36	26.5
22	16 33.2	16 33.0	60 38.8	+0.08	60 37.8	−0.26	22 47.7	2.52	27.5
23	16 31.6	16 29.0	60 32.6	−0.60	60 23.4	0.93	23 49.5	2.62	28.5
24	16 25.5	16 21.0	60 10.4	1.24	59 53.8	1.52	δ		0.1
25	16 15.6	16 9.5	59 34.1	1.76	59 11.7	1.96	0 52.7	2.63	1.1
26	16 2.9	15 55.8	58 47.2	2.11	58 21.3	2.20	1 51.6	2.51	2.1
27	15 48.6	15 41.2	57 54.6	2.25	57 27.6	2.24	2 52.8	2.32	3.1
28	15 33.9	15 26.9	57 0.9	2.19	56 35.2	2.10	3 46.0	2.11	4.1
29	15 20.3	15 14.1	56 10.7	1.98	55 47.9	1.82	4 34.4	1.92	5.1
30	15 8.4	15 3.3	55 27.0	1.65	55 8.4	1.45	5 18.8	1.78	6.1
31	14 58.9	14 55.1	54 52.2	1.25	54 38.4	1.04	6 0.3	1.69	7.1
32	14 52.1	14 49.7	54 27.2	−0.82	54 18.6	−0.61	6 40.3	1.65	8.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 26 40.34	2.1157	S. 19 35 43.4	10.164
1	20 28 47.07	2.1088	19 25 31.1	10.244
2	20 30 53.39	2.1019	19 15 14.1	10.323
3	20 32 59.30	2.0951	19 4 52.4	10.401
4	20 35 4.80	2.0883	18 54 26.0	10.477
5	20 37 9.90	2.0817	18 43 55.1	10.552
6	20 39 14.60	2.0750	18 33 19.8	10.625
7	20 41 18.90	2.0684	18 22 40.1	10.698
8	20 43 22.81	2.0619	18 11 56.0	10.770
9	20 45 26.33	2.0554	18 1 7.7	10.840
10	20 47 29.46	2.0490	17 50 15.2	10.909
11	20 49 32.21	2.0426	17 39 18.6	10.976
12	20 51 34.57	2.0363	17 28 18.1	11.042
13	20 53 36.56	2.0301	17 17 13.6	11.108
14	20 55 38.18	2.0238	17 6 5.1	11.173
15	20 57 39.42	2.0177	16 54 52.8	11.236
16	20 59 40.30	2.0117	16 43 36.8	11.298
17	21 1 40.82	2.0058	16 32 17.1	11.359
18	21 3 40.99	1.9999	16 20 53.7	11.419
19	21 5 40.81	1.9940	16 9 26.8	11.477
20	21 7 40.27	1.9881	15 57 56.4	11.535
21	21 9 39.38	1.9823	15 46 22.6	11.592
22	21 11 38.15	1.9767	15 34 45.4	11.647
23	21 13 36.59	1.9712	S. 15 23 4.9	11.702

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 15 34.69	1.9656	S. 15 11 21.2	11.755
1	21 17 32.46	1.9602	14 59 34.3	11.807
2	21 19 29.91	1.9548	14 47 44.3	11.859
3	21 21 27.04	1.9496	14 35 51.2	11.910
4	21 23 23.86	1.9443	14 23 55.1	11.958
5	21 25 20.36	1.9391	14 11 56.2	12.006
6	21 27 16.55	1.9339	13 59 54.4	12.053
7	21 29 12.43	1.9289	13 47 49.8	12.100
8	21 31 8.02	1.9240	13 35 42.4	12.146
9	21 33 3.31	1.9191	13 23 32.3	12.190
10	21 34 58.31	1.9143	13 11 19.6	12.234
11	21 36 53.03	1.9096	12 59 4.3	12.277
12	21 38 47.46	1.9049	12 46 46.4	12.318
13	21 40 41.62	1.9003	12 34 26.1	12.358
14	21 42 35.50	1.8957	12 22 3.4	12.398
15	21 44 29.11	1.8912	12 9 38.3	12.438
16	21 46 22.45	1.8869	11 57 10.9	12.476
17	21 48 15.54	1.8827	11 44 41.2	12.512
18	21 50 8.37	1.8784	11 32 9.4	12.547
19	21 52 0.95	1.8743	11 19 35.5	12.583
20	21 53 53.29	1.8702	11 6 59.4	12.619
21	21 55 45.38	1.8662	10 54 21.2	12.652
22	21 57 37.23	1.8622	10 41 41.0	12.686
23	21 59 28.85	1.8584	10 28 58.9	12.718
24	22 1 20.24	1.8546	S. 10 16 14.9	12.749

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 1 20.24	1.8546	S. 10 16 14.9	12.749
1	22 3 11.40	1.8509	10 3 29.0	12.779
2	22 5 2.35	1.8473	9 50 41.4	12.808
3	22 6 53.08	1.8438	9 37 52.0	12.837
4	22 8 43.60	1.8403	9 25 0.9	12.865
5	22 10 33.92	1.8369	9 12 8.2	12.892
6	22 12 24.03	1.8336	8 59 13.9	12.918
7	22 14 13.95	1.8303	8 46 18.1	12.943
8	22 16 3.67	1.8271	8 33 20.7	12.969
9	22 17 53.20	1.8240	8 20 21.8	12.993
10	22 19 42.55	1.8210	8 7 21.5	13.016
11	22 21 31.72	1.8180	7 54 19.9	13.038
12	22 23 20.71	1.8151	7 41 17.0	13.059
13	22 25 9.53	1.8123	7 28 12.8	13.080
14	22 26 58.19	1.8097	7 15 7.4	13.101
15	22 28 46.69	1.8070	7 2 0.7	13.121
16	22 30 35.03	1.8044	6 48 52.9	13.139
17	22 32 23.22	1.8018	6 35 44.0	13.157
18	22 34 11.25	1.7993	6 22 34.0	13.175
19	22 35 59.14	1.7970	6 9 23.0	13.191
20	22 37 46.89	1.7948	5 56 11.1	13.206
21	22 39 34.51	1.7926	5 42 58.3	13.221
22	22 41 22.00	1.7904	5 29 44.6	13.236
23	22 43 9.36	1.7883	S. 5 16 30.0	13.250

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 44 56.60	1.7863	S. 5 3 14.6	13.263
1	22 46 43.72	1.7844	4 49 58.4	13.275
2	22 48 30.73	1.7826	4 36 41.6	13.286
3	22 50 17.63	1.7808	4 23 24.1	13.297
4	22 52 4.42	1.7791	4 10 6.0	13.307
5	22 53 51.12	1.7775	3 56 47.3	13.317
6	22 55 37.72	1.7759	3 43 28.0	13.326
7	22 57 24.23	1.7744	3 30 8.2	13.333
8	22 59 10.65	1.7730	3 16 48.0	13.341
9	23 0 56.99	1.7717	3 3 27.3	13.347
10	23 2 43.25	1.7704	2 50 6.3	13.353
11	23 4 29.44	1.7693	2 36 44.9	13.359
12	23 6 15.56	1.7682	2 23 23.2	13.364
13	23 8 1.62	1.7671	2 10 1.2	13.368
14	23 9 47.61	1.7660	1 56 39.0	13.371
15	23 11 33.54	1.7651	1 43 16.7	13.373
16	23 13 19.42	1.7643	1 29 54.3	13.375
17	23 15 5.26	1.7636	1 16 31.7	13.377
18	23 16 51.05	1.7628	1 3 9.0	13.378
19	23 18 36.80	1.7622	0 49 46.3	13.377
20	23 20 22.52	1.7617	0 36 23.7	13.377
21	23 22 8.21	1.7612	0 23 1.1	13.376
22	23 23 53.87	1.7608	S. 0 9 38.6	13.373
23	23 25 39.51	1.7604	N. 0 3 43.7	13.371
24	23 27 25.12	1.7601	N. 0 17 5.9	13.367

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 27 25.12	1.7601	N. 0 17 5.9	13.367
1	23 29 10.72	1.7599	0 30 27.8	13.363
2	23 30 56.31	1.7598	0 43 49.5	13.359
3	23 32 41.90	1.7598	0 57 10.9	13.354
4	23 34 27.49	1.7598	1 10 32.0	13.348
5	23 36 13.08	1.7598	1 23 52.7	13.341
6	23 37 58.67	1.7599	1 37 12.9	13.333
7	23 39 44.27	1.7602	1 50 32.7	13.326
8	23 41 29.89	1.7605	2 3 52.0	13.317
9	23 43 15.53	1.7608	2 17 10.7	13.307
10	23 45 1.19	1.7612	2 30 28.8	13.297
11	23 46 46.88	1.7617	2 43 46.3	13.287
12	23 48 32.60	1.7623	2 57 3.2	13.276
13	23 50 18.36	1.7629	3 10 19.4	13.263
14	23 52 4.15	1.7635	3 23 34.8	13.250
15	23 53 49.98	1.7643	3 36 49.4	13.237
16	23 55 35.86	1.7652	3 50 3.2	13.223
17	23 57 21.80	1.7661	4 3 16.1	13.208
18	23 59 7.79	1.7670	4 16 28.2	13.193
19	0 0 53.84	1.7680	4 29 39.3	13.177
20	0 2 39.95	1.7691	4 42 49.4	13.160
21	0 4 26.13	1.7702	4 55 58.5	13.142
22	0 6 12.38	1.7714	5 9 6.5	13.124
23	0 7 58.70	1.7727	N. 5 22 13.4	13.105

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 9 45.10	1.7741	N. 5 35 19.1	13.085
1	0 11 31.59	1.7755	5 48 23.6	13.065
2	0 13 18.16	1.7769	6 1 26.9	13.044
3	0 15 4.82	1.7785	6 14 28.9	13.022
4	0 16 51.58	1.7801	6 27 29.6	13.000
5	0 18 38.43	1.7817	6 40 28.9	12.977
6	0 20 25.38	1.7834	6 53 26.8	12.952
7	0 22 12.44	1.7852	7 6 23.2	12.927
8	0 23 59.61	1.7871	7 19 18.1	12.902
9	0 25 46.89	1.7890	7 32 11.5	12.877
10	0 27 34.29	1.7910	7 45 3.3	12.850
11	0 29 21.81	1.7930	7 57 53.5	12.822
12	0 31 9.45	1.7951	8 10 42.0	12.794
13	0 32 57.22	1.7973	8 23 28.8	12.765
14	0 34 45.12	1.7995	8 36 13.8	12.736
15	0 36 33.16	1.8018	8 48 57.1	12.706
16	0 38 21.34	1.8042	9 1 38.5	12.674
17	0 40 9.66	1.8065	9 14 17.9	12.641
18	0 41 58.12	1.8089	9 26 55.4	12.608
19	0 43 46.73	1.8115	9 39 30.9	12.575
20	0 45 35.50	1.8142	9 52 4.4	12.541
21	0 47 24.43	1.8168	10 4 35.8	12.506
22	0 49 13.52	1.8195	10 17 5.1	12.470
23	0 51 2.77	1.8222	10 29 32.2	12.434
24	0 52 52.18	1.8249	N.10 41 57.1	12.397

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 52 52.18	1.8249	N.10 41 57.1	12.397
1	0 54 41.76	1.8278	10 54 19.8	12.358
2	0 56 31.52	1.8308	11 6 40.1	12.318
3	0 58 21.46	1.8338	11 18 58.0	12.278
4	1 0 11.58	1.8368	11 31 13.5	12.238
5	1 2 1.88	1.8399	11 43 26.6	12.197
6	1 3 52.37	1.8431	11 55 37.2	12.155
7	1 5 43.05	1.8462	12 7 45.2	12.112
8	1 7 33.92	1.8495	12 19 50.6	12.068
9	1 9 24.99	1.8528	12 31 53.4	12.024
10	1 11 16.26	1.8562	12 43 53.5	11.978
11	1 13 7.74	1.8597	12 55 50.8	11.931
12	1 14 59.42	1.8631	13 7 45.2	11.883
13	1 16 51.31	1.8666	13 19 36.8	11.836
14	1 18 43.41	1.8702	13 31 25.5	11.788
15	1 20 35.73	1.8738	13 43 11.3	11.738
16	1 22 28.27	1.8775	13 54 54.1	11.687
17	1 24 21.03	1.8812	14 6 33.8	11.636
18	1 26 14.01	1.8849	14 18 10.4	11.583
19	1 28 7.22	1.8887	14 29 43.8	11.530
20	1 30 0.66	1.8926	14 41 14.0	11.477
21	1 31 54.33	1.8965	14 52 41.0	11.422
22	1 33 48.24	1.9005	15 4 4.6	11.365
23	1 35 42.39	1.9044	N.15 15 24.8	11.308

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 37 36.77	1.9084	N.15 26 41.6	11.251
1	1 39 31.40	1.9126	15 37 54.9	11.193
2	1 41 26.28	1.9167	15 49 4.7	11.133
3	1 43 21.41	1.9209	16 0 10.9	11.073
4	1 45 16.79	1.9251	16 11 13.5	11.012
5	1 47 12.42	1.9293	16 22 12.3	10.949
6	1 49 8.30	1.9335	16 33 7.4	10.887
7	1 51 4.44	1.9379	16 43 58.7	10.823
8	1 53 0.85	1.9423	16 54 46.1	10.757
9	1 54 57.52	1.9467	17 5 29.5	10.690
10	1 56 54.46	1.9512	17 16 8.9	10.624
11	1 58 51.66	1.9556	17 26 44.4	10.557
12	2 0 49.13	1.9601	17 37 15.8	10.488
13	2 2 46.87	1.9646	17 47 43.0	10.418
14	2 4 44.88	1.9692	17 58 6.0	10.348
15	2 6 43.17	1.9738	18 8 24.8	10.277
16	2 8 41.74	1.9785	18 18 39.2	10.204
17	2 10 40.59	1.9831	18 28 49.2	10.130
18	2 12 39.71	1.9878	18 38 54.8	10.056
19	2 14 39.12	1.9925	18 48 55.9	9.980
20	2 16 38.81	1.9972	18 58 52.4	9.903
21	2 18 38.79	2.0020	19 8 44.3	9.826
22	2 20 39.05	2.0068	19 18 31.5	9.748
23	2 22 39.60	2.0116	19 28 14.1	9.670
24	2 24 40.44	2.0164	N.19 37 51.9	9.589

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					**MONDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 24 40.44	2.0164	N.19 37 51.9	9.589	0	4 7 4.92	2.2443	N.25 27 1.2	4.593
1	2 26 41.57	2.0212	19 47 24.8	9.508	1	4 9 19.70	2.2483	25 31 33.0	4.467
2	2 28 42.99	2.0261	19 56 52.8	9.426	2	4 11 34.72	2.2523	25 35 57.2	4.340
3	2 30 44.70	2.0310	20 6 15.9	9.343	3	4 13 49.98	2.2562	25 40 13.8	4.212
4	2 32 46.71	2.0359	20 15 33.9	9.258	4	4 16 5.47	2.2601	25 44 22.7	4.083
5	2 34 49.01	2.0408	20 24 46.8	9.173	5	4 18 21.19	2.2638	25 48 23.8	3.953
6	2 36 51.61	2.0457	20 33 54.6	9.087	6	4 20 37.13	2.2675	25 52 17.1	3.823
7	2 38 54.50	2.0507	20 42 57.2	8.999	7	4 22 53.29	2.2712	25 56 2.6	3.693
8	2 40 57.69	2.0557	20 51 54.5	8.911	8	4 25 9.67	2.2747	25 59 40.3	3.562
9	2 43 1.18	2.0606	21 0 46.5	8.822	9	4 27 26.26	2.2782	26 3 10.1	3.430
10	2 45 4.96	2.0655	21 9 33.1	8.732	10	4 29 43.06	2.2817	26 6 31.9	3.297
11	2 47 9.04	2.0705	21 18 14.3	8.641	11	4 32 0.06	2.2851	26 9 45.7	3.163
12	2 49 13.42	2.0755	21 26 50.0	8.548	12	4 34 17.27	2.2884	26 12 51.4	3.028
13	2 51 18.10	2.0805	21 35 20.1	8.455	13	4 36 34.67	2.2916	26 15 49.1	2.893
14	2 53 23.08	2.0855	21 43 44.6	8.362	14	4 38 52.26	2.2947	26 18 38.6	2.758
15	2 55 28.36	2.0905	21 52 3.5	8.267	15	4 41 10.04	2.2978	26 21 20.0	2.622
16	2 57 33.94	2.0954	22 0 16.6	8.170	16	4 43 28.00	2.3007	26 23 53.2	2.485
17	2 59 39.81	2.1003	22 8 23.9	8.073	17	4 45 46.13	2.3036	26 26 18.2	2.348
18	3 1 45.98	2.1053	22 16 25.4	7.976	18	4 48 4.43	2.3064	26 28 35.0	2.211
19	3 3 52.45	2.1103	22 24 21.0	7.877	19	4 50 22.90	2.3092	26 30 43.5	2.072
20	3 5 59.22	2.1153	22 32 10.6	7.776	20	4 52 41.53	2.3119	26 32 43.6	1.932
21	3 8 6.28	2.1202	22 39 54.1	7.674	21	4 55 0.83	2.3146	26 34 35.4	1.793
22	3 10 13.64	2.1252	22 47 31.5	7.572	22	4 57 19.28	2.3170	26 36 18.8	1.653
23	3 12 21.30	2.1302	N.22 55 2.8	7.470	23	4 59 38.37	2.3193	N.26 37 53.8	1.513
	SUNDAY 10.					**TUESDAY 12.**			
0	3 14 29.26	2.1351	N.23 2 27.9	7.366	0	5 1 57.60	2.3217	N.26 39 20.4	1.372
1	3 16 37.51	2.1399	23 9 46.7	7.261	1	5 4 16.97	2.3239	26 40 38.5	1.231
2	3 18 46.05	2.1448	23 16 59.2	7.156	2	5 6 36.47	2.3261	26 41 48.1	1.089
3	3 20 54.88	2.1496	23 24 5.4	7.049	3	5 8 56.10	2.3282	26 42 49 2	0.947
4	3 23 4.00	2.1545	23 31 5.1	6.941	4	5 11 15.85	2.3302	26 43 41.8	0.805
5	3 25 13.42	2.1594	23 37 58.3	6.832	5	5 13 35.72	2.3321	26 44 25.8	0.662
6	3 27 23.13	2.1642	23 44 44.9	6.722	6	5 15 55.70	2.3338	26 45 1.2	0.518
7	3 29 33.12	2.1689	23 51 24.9	6 611	7	5 18 15.78	2.3355	26 45 28.0	0.375
8	3 31 43.40	2.1737	23 57 58.2	6.500	8	5 20 35.96	2.3372	26 45 46.2	0.231
9	3 33 53.96	2.1783	24 4 24.9	6.388	9	5 22 56.24	2.3387	26 45 55.7	+0.087
10	3 36 4.80	2.1830	24 10 44.8	6.274	10	5 25 16.61	2.3401	26 45 56.6	−0.057
11	3 38 15.92	2.1877	24 16 57.8	6.160	11	5 27 37.06	2.3414	26 45 48.8	0.202
12	3 40 27.32	2.1923	24 23 4.0	6.045	12	5 29 57.58	2.3427	26 45 32.4	0.346
13	3 42 39.00	2.1969	24 29 3.2	5.929	13	5 32 18.18	2.3439	26 45 7.3	0.492
14	3 44 50.95	2.2014	24 34 55.4	5.812	14	5 34 38.85	2.3449	26 44 33.4	0.637
15	3 47 3.17	2.2059	24 40 40.6	5.693	15	5 36 59.57	2.3458	26 43 50.8	0.782
16	3 49 15.66	2.2103	24 46 18.6	5.574	16	5 39 20.35	2.3467	26 42 59.5	0.928
17	3 51 28.41	2.2148	24 51 49.5	5.455	17	5 41 41.18	2.3475	26 41 59.4	1 074
18	3 53 41.43	2.2192	24 57 13.2	5.334	18	5 44 2.05	2.3482	26 40 50.6	1.220
19	3 55 54.71	2.2235	25 2 29.6	5 213	19	5 46 22.96	2.3488	26 39 33.0	1.366
20	3 58 8.25	2.2277	25 7 38.7	5.091	20	5 48 43.91	2.3493	26 38 6.7	1.512
21	4 0 22.04	2.2320	25 12 40.5	4.968	21	5 51 4.88	2.3497	26 36 31.6	1.658
22	4 2 36.09	2.2362	25 17 34.9	4.844	22	5 53 25.87	2.3500	26 34 47.7	1.805
23	4 4 50.38	2.2403	25 22 21.8	4.719	23	5 55 46.88	2.3502	26 32 55.0	1.951
24	4 7 4.92	2.2443	N.25 27 1.2	4.593	24	5 58 7.90	2.3503	N.26 30 53.6	2.097

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 58 7.90	2.3503	N.26 30 53.6	2.097
1	6 0 28.92	2.3504	26 28 43.4	2.243
2	6 2 49.95	2.3504	26 26 24.4	2.389
3	6 5 10.97	2.3503	26 23 56.7	2.535
4	6 7 31.98	2.3501	26 21 20.2	2.681
5	6 9 52.98	2.3498	26 18 35.0	2.827
6	6 12 13.95	2.3493	26 15 41.0	2.972
7	6 14 34.89	2.3488	26 12 38.3	3.118
8	6 16 55.81	2.3483	26 9 26.8	3.264
9	6 19 16.69	2.3477	26 6 6.6	3.409
10	6 21 37.53	2.3469	26 2 37.7	3.554
11	6 23 58.32	2.3461	25 59 0.1	3.698
12	6 26 19.06	2.3452	25 55 13.9	3.842
13	6 28 39.75	2.3442	25 51 19.0	3.987
14	6 31 0.37	2.3431	25 47 15.4	4.132
15	6 33 20.92	2.3419	25 43 3.2	4.276
16	6 35 41.40	2.3407	25 38 42.3	4.420
17	6 38 1.81	2.3395	25 34 12.8	4.563
18	6 40 22.14	2.3381	25 29 34.8	4.705
19	6 42 42.38	2.3367	25 24 48.2	4.848
20	6 45 2.54	2.3353	25 19 53.0	4.990
21	6 47 22.61	2.3337	25 14 49.4	5.131
22	6 49 42.58	2.3319	25 9 37.3	5.272
23	6 52 2.44	2.3302	N.25 4 16.7	5.413

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 54 22.20	2.3284	N.24 58 47.7	5.553
1	6 56 41.85	2.3266	24 53 10.3	5.693
2	6 59 1.39	2.3247	24 47 24.5	5.833
3	7 1 20.81	2.3227	24 41 30.3	5.972
4	7 3 40.11	2.3207	24 35 27.8	6.111
5	7 5 59.28	2.3186	24 29 17.0	6.249
6	7 8 18.33	2.3164	24 22 57.9	6.387
7	7 10 37.25	2.3142	24 16 30.6	6.523
8	7 12 56.04	2.3120	24 9 55.1	6.659
9	7 15 14.69	2.3007	24 3 11.5	6.794
10	7 17 33.20	2.3073	23 56 19.8	6.929
11	7 19 51.57	2.3050	23 49 20.0	7.064
12	7 22 9.80	2.3026	23 42 12.1	7.198
13	7 24 27.88	2.3000	23 34 56.2	7.332
14	7 26 45.80	2.2974	23 27 32.3	7.464
15	7 29 3.57	2.2949	23 20 0.5	7.596
16	7 31 21.19	2.2923	23 12 20.8	7.727
17	7 33 38.65	2.2897	23 4 33.3	7.858
18	7 35 55.95	2.2870	22 56 37.9	7.988
19	7 38 13.09	2.2843	22 48 34.7	8.117
20	7 40 30.07	2.2816	22 40 23.8	8.245
21	7 42 46.88	2.2787	22 32 5.3	8.372
22	7 45 3.52	2.2759	22 23 39.2	8.498
23	7 47 19.99	2.2732	22 15 5.5	8.625
24	7 49 36.30	2.2704	N.22 6 24.2	8.751

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 49 36.30	2.2704	N.22 6 24.2	8.751
1	7 51 52.44	2.2675	21 57 35.4	8.875
2	7 54 8.40	2.2646	21 48 39.2	8.999
3	7 56 24.19	2.2617	21 39 35.5	9.122
4	7 58 39.80	2.2588	21 30 24.5	9.244
5	8 0 55.24	2.2559	21 21 6.2	9.366
6	8 3 10.51	2.2530	21 11 40.6	9.487
7	8 5 25.60	2.2500	21 2 7.8	9.606
8	8 7 40.51	2.2471	20 52 27.9	9.725
9	8 9 55.25	2.2442	20 42 40.8	9.843
10	8 12 9.81	2.2412	20 32 46.7	9.960
11	8 14 24.19	2.2382	20 22 45.6	10.076
12	8 16 38.39	2.2352	20 12 37.6	10.191
13	8 18 52.41	2.2322	20 2 22.7	10.306
14	8 21 6.26	2.2293	19 52 0.9	10.420
15	8 23 19.93	2.2263	19 41 32.3	10.532
16	8 25 33.42	2.2233	19 30 57.0	10.644
17	8 27 46.73	2.2204	19 20 15.0	10.755
18	8 29 59.87	2.2175	19 9 26.4	10.865
19	8 32 12.83	2.2146	18 58 31.2	10.974
20	8 34 25.62	2.2117	18 47 29.5	11.082
21	8 36 38.23	2.2088	18 36 21.3	11.189
22	8 38 50.67	2.2059	18 25 6.8	11.295
23	8 41 2.94	2.2031	N.18 13 45.9	11.401

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 43 15.04	2.2002	N.18 2 18.7	11.505
1	8 45 26.97	2.1974	17 50 45.3	11.608
2	8 47 38.73	2.1946	17 39 5.8	11.710
3	8 49 50.32	2.1918	17 27 20.1	11.812
4	8 52 1.75	2.1891	17 15 28.4	11.912
5	8 54 13.02	2.1864	17 3 30.7	12.012
6	8 56 24.12	2.1837	16 51 27.0	12.111
7	8 58 35.06	2.1811	16 39 17.4	12.207
8	9 0 45.85	2.1785	16 27 2.1	12.302
9	9 2 56.48	2.1759	16 14 41.1	12.397
10	9 5 6.96	2.1734	16 2 14.4	12.492
11	9 7 17.29	2.1708	15 49 42.0	12.586
12	9 9 27.46	2.1683	15 37 4.1	12.678
13	9 11 37.49	2.1659	15 24 20.7	12.769
14	9 13 47.37	2.1635	15 11 31.8	12.859
15	9 15 57.11	2.1612	14 58 37.6	12.948
16	9 18 6.71	2.1589	14 45 38.1	13.036
17	9 20 16.18	2.1567	14 32 33.3	13.123
18	9 22 25.51	2.1544	14 19 23.3	13.209
19	9 24 34.71	2.1522	14 6 8.2	13.294
20	9 26 43.78	2.1501	13 52 48.0	13.377
21	9 28 52.72	2.1480	13 39 22.9	13.459
22	9 31 1.54	2.1460	13 25 52.9	13.542
23	9 33 10.24	2.1441	13 12 17.9	13.623
24	9 35 18.83	2.1422	N.12 58 38.1	13.702

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 17.					TUESDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 35 18.83	2.1422	N.12 58 38.1	13.702	0	11 17 9.47	2.1295	N. 0 51 40.8	16.108
1	9 37 27.30	2.1403	12 44 53.6	13.780	1	11 19 17.29	2.1312	0 35 33.8	16.126
2	9 39 35.66	2.1385	12 31 4.5	13.857	2	11 21 25.22	2.1330	0 19 25.7	16 142
3	9 41 43.92	2.1368	12 17 10.8	13.933	3	11 23 33.25	2.1348	N. 0 3 16.7	16.157
4	9 43 52.08	2.1351	12 3 12.5	14.008	4	11 25 41.40	2.1367	S. 0 12 53.2	16.171
5	9 46 0.13	2.1333	11 49 9.8	14.082	5	11 27 49.66	2.1387	0 29 3.8	16.183
6	9 48 8.08	2.1317	11 35 2.7	14.155	6	11 29 58.04	2.1407	0 45 15.1	16.193
7	9 50 15.94	2.1303	11 20 51.2	14.227	7	11 32 6.55	2.1429	1 1 27.0	16.202
8	9 52 23.72	2.1289	11 6 35.5	14.297	8	11 34 15.19	2.1452	1 17 39.4	16.210
9	9 54 31.41	2.1275	10 52 15.6	14.366	9	11 36 23.97	2.1475	1 33 52.2	16.216
10	9 56 39.02	2.1262	10 37 51.6	14.433	10	11 38 32.89	2.1498	1 50 5.3	16.220
11	9 58 46.55	2.1248	10 23 23.6	14.501	11	11 40 41.95	2.1523	2 6 18.6	16.222
12	10 0 54.00	2.1236	10 8 51.5	14.567	12	11 42 51.17	2.1550	2 22 32.0	16.224
13	10 3 1.38	2.1225	9 54 15.5	14.632	13	11 45 0.55	2.1577	2 38 45.5	16.224
14	10 5 8.70	2.1215	9 39 35.7	14.695	14	11 47 10.09	2.1603	2 54 58.9	16.222
15	10 7 15.96	2.1205	9 24 52.1	14.758	15	11 49 19.79	2.1631	3 11 12.2	16.219
16	10 9 23.16	2.1196	9 10 4.8	14.818	16	11 51 29.66	2.1661	3 27 25.2	16.213
17	10 11 30.31	2.1187	8 55 13.9	14.878	17	11 53 39.72	2.1692	3 43 37.8	16.207
18	10 13 37.41	2.1179	8 40 19.4	14.937	18	11 55 49.96	2.1723	3 59 50.0	16.196
19	10 15 44.46	2.1172	8 25 21.4	14.995	19	11 58 0.39	2.1754	4 16 1.6	16.188
20	10 17 51.47	2.1166	8 10 20.0	15.051	20	12 0 11.01	2.1786	4 32 12.6	16.177
21	10 19 58.45	2.1160	7 55 15.3	15.106	21	12 2 21.82	2.1819	4 48 22.9	16.164
22	10 22 5.39	2.1154	7 40 7.3	15.160	22	12 4 32.84	2.1853	5 4 32.3	16.149
23	10 24 12.30	2.1150	N. 7 24 56.1	15.213	23	12 6 44.06	2.1887	S. 5 20 40.8	16.132
	MONDAY 18.					WEDNESDAY 20.			
0	10 26 19.19	2.1147	N. 7 9 41.7	15.265	0	12 8 55.49	2.1923	S. 5 36 48.2	16.114
1	10 28 26.06	2 1144	6 54 24.3	15.314	1	12 11 7.14	2.1960	5 52 54.5	16.094
2	10 30 32.92	2.1142	6 39 4.0	15.363	2	12 13 19.01	2.1997	6 8 59.5	16.072
3	10 32 39.76	2.1140	6 23 40.7	15.412	3	12 15 31.11	2.2036	6 25 3.2	16.049
4	10 34 46.60	2.1140	6 8 14.6	15.458	4	12 17 43.44	2.2075	6 41 5.4	16.023
5	10 36 53.44	2.1140	5 52 45.8	15.503	5	12 19 56.01	2.2115	6 57 6.0	15.996
6	10 39 0.28	2.1141	5 37 14.3	15.547	6	12 22 8.82	2.2155	7 13 4.9	15.967
7	10 41 7.13	2.1142	5 21 40.2	15.589	7	12 24 21.87	2.2197	7 29 2.0	15.937
8	10 43 13.99	2.1145	5 6 3.6	15.631	8	12 26 35.18	2.2239	7 44 57.3	15.905
9	10 45 20.87	2.1148	4 50 24.5	15.671	9	12 28 48.74	2.2282	8 0 50.6	15.871
10	10 47 27.77	2.1152	4 34 43.1	15.709	10	12 31 2.56	2.2325	8 16 41.8	15.834
11	10 49 34.70	2.1157	4 18 59.4	15.747	11	12 33 16.64	2.2369	8 32 30.7	15.796
12	10 51 41.66	2.1163	4 3 13.5	15.783	12	12 35 30.99	2.2414	8 48 17.3	15.757
13	10 53 48.66	2.1170	3 47 25.5	15.818	13	12 37 45.61	2.2460	9 4 1.5	15.716
14	10 55 55.70	2.1177	3 31 35.4	15.851	14	12 40 0.51	2.2507	9 19 43.2	15.672
15	10 58 2.78	2.1184	3 15 43.4	15.882	15	12 42 15.69	2.2554	9 35 22.2	15.627
16	11 0 9.91	2.1194	2 59 49.6	15.912	16	12 44 31.16	2.2602	9 50 58.4	15.579
17	11 2 17.11	2.1205	2 43 53.9	15.942	17	12 46 46.91	2.2649	10 6 31.7	15.531
18	11 4 24.37	2.1215	2 27 56.5	15.970	18	12 49 2.95	2.2698	10 22 2.1	15.481
19	11 6 31.69	2.1227	2 11 57.5	15.997	19	12 51 19.29	2.2749	10 37 29.4	15.428
20	11 8 39.09	2.1239	1 55 56.9	16.022	20	12 53 35.94	2.2800	10 52 53.4	15.373
21	11 10 46.56	2.1252	1 39 54.9	16.045	21	12 55 52.89	2.2851	11 8 14.1	15.316
22	11 12 54.11	2.1266	1 23 51.5	16.068	22	12 58 10.15	2.2903	11 23 31.3	15.257
23	11 15 1.75	2.1280	1 7 46.7	16.089	23	13 0 27.72	2.2955	11 38 45.0	15.197
24	11 17 9.47	2.1295	N. 0 51 40.8	16.108	24	13 2 45.61	2.3008	S.11 53 55.0	15.135

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 21.					**SATURDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 2 45.61	2.3008	S. 11 53 55.0	15.135	0	14 59 55.33	2.5811	S. 22 10 51.4	9.821
1	13 5 3.82	2.3062	12 9 1.2	15.071	1	15 2 30.36	2.5863	22 20 36.0	9.664
2	13 7 22.35	2.3115	12 24 3.5	15.004	2	15 5 5.69	2.5914	22 30 11.1	9.506
3	13 9 41.20	2.3169	12 39 1.7	14.936	3	15 7 41.33	2.5965	22 39 36.7	9.347
4	13 12 0.38	2.3225	12 53 55.8	14.866	4	15 10 17.27	2.6015	22 48 52.7	9.185
5	13 14 19.90	2.3281	13 8 45.6	14.793	5	15 12 53.51	2.6063	22 57 58.9	9.022
6	13 16 39.76	2.3337	13 23 31.0	14.719	6	15 15 30.03	2.6110	23 6 55.3	8.857
7	13 18 59.95	2.3393	13 38 11.9	14.643	7	15 18 6.83	2.6157	23 15 41.8	8.692
8	13 21 20.48	2.3451	13 52 48.2	14.566	8	15 20 43.91	2.6203	23 24 18.3	8.525
9	13 23 41.36	2.3508	14 7 19.8	14.486	9	15 23 21.27	2.6248	23 32 44.8	8.357
10	13 26 2.58	2.3566	14 21 46.5	14.403	10	15 25 58.89	2.6291	23 41 1.1	8.186
11	13 28 24.15	2.3624	14 36 8.2	14.318	11	15 28 36.76	2.6333	23 49 7.1	8.014
12	13 30 46.07	2.3683	14 50 24.7	14.232	12	15 31 14.89	2.6375	23 57 2.8	7.842
13	13 33 8.34	2.3742	15 4 36.0	14.144	13	15 33 53.26	2.6414	24 4 48.1	7.668
14	13 35 30.97	2.3802	15 18 42.0	14.055	14	15 36 31.86	2.6452	24 12 23.0	7.493
15	13 37 53.96	2.3862	15 32 42.6	13.963	15	15 39 10.69	2.6490	24 19 47.3	7.317
16	13 40 17.31	2.3921	15 46 37.6	13.868	16	15 41 49.74	2.6526	24 27 1.0	7.139
17	13 42 41.01	2.3980	16 0 26.8	13.772	17	15 44 29.00	2.6559	24 34 4.0	6.961
18	13 45 5.07	2.4041	16 14 10.2	13.673	18	15 47 8.45	2.6592	24 40 56.3	6.782
19	13 47 29.50	2.4102	16 27 47.6	13.573	19	15 49 48.10	2.6624	24 47 37.8	6.601
20	13 49 54.29	2.4162	16 41 19.0	13.472	20	15 52 27.94	2.6655	24 54 8.4	6.419
21	13 52 19.45	2.4223	16 54 44.2	13.368	21	15 55 7.96	2.6684	25 0 28.1	6.237
22	13 54 44.97	2.4284	17 8 3.1	13.261	22	15 57 48.15	2.6711	25 6 36.8	6.053
23	13 57 10.86	2.4346	S. 17 21 15.5	13.152	23	16 0 28.49	2.6736	S. 25 12 34.5	5.870
	FRIDAY 22.					**SUNDAY 24.**			
0	13 59 37.12	2.4407	S. 17 34 21.3	13.041	0	16 3 8.98	2.6760	S. 25 18 21.2	5.685
1	14 2 3.74	2.4468	17 47 20.4	12.929	1	16 5 49.61	2.6783	25 23 56.7	5.498
2	14 4 30.73	2.4529	18 0 12.8	12.816	2	16 8 30.38	2.6804	25 29 21.0	5.312
3	14 6 58.09	2.4591	18 12 58.3	12.699	3	16 11 11.26	2.6823	25 34 34.1	5.125
4	14 9 25.82	2.4652	18 25 36.7	12.581	4	16 13 52.25	2.6841	25 39 36.0	4.937
5	14 11 53.91	2.4712	18 38 8.0	12.462	5	16 16 33.35	2.6857	25 44 26.5	4.748
6	14 14 22.37	2.4773	18 50 32.1	12.340	6	16 19 14.54	2.6872	25 49 5.7	4.558
7	14 16 51.19	2.4834	19 2 48.8	12.215	7	16 21 55.81	2.6884	25 53 33.5	4.369
8	14 19 20.38	2.4896	19 14 57.9	12.088	8	16 24 37.15	2.6895	25 57 50.0	4.180
9	14 21 49.94	2.4957	19 26 59.4	11.961	9	16 27 18.55	2.6904	26 1 55.1	3.989
10	14 24 19.86	2.5016	19 38 53.2	11.831	10	16 30 0.00	2.6912	26 5 48.7	3.798
11	14 26 50.13	2.5075	19 50 39.1	11.698	11	16 32 41.49	2.6918	26 9 30.9	3.607
12	14 29 20.76	2.5135	20 2 17.0	11.565	12	16 35 23.01	2.6922	26 13 1.6	3.416
13	14 31 51.75	2.5194	20 13 46.9	11.430	13	16 38 4.55	2.6923	26 16 20.8	3.224
14	14 34 23.09	2.5253	20 25 8.6	11.292	14	16 40 46.09	2.6923	26 19 28.5	3.033
15	14 36 54.79	2.5311	20 36 22.0	11.153	15	16 43 27.63	2.6922	26 22 24.8	2.842
16	14 39 26.83	2.5369	20 47 27.0	11.012	16	16 46 9.15	2.6918	26 25 9.5	2.649
17	14 41 59.22	2.5427	20 58 23.5	10.869	17	16 48 50.65	2.6914	26 27 42.7	2.457
18	14 44 31.95	2.5483	21 9 11.3	10.724	18	16 51 32.12	2.6907	26 30 4.4	2.266
19	14 47 5.02	2.5539	21 19 50.4	10.578	19	16 54 13.54	2.6898	26 32 14.6	2.074
20	14 49 38.42	2.5595	21 30 20.7	10.430	20	16 56 54.90	2.6887	26 34 13.3	1.882
21	14 52 12.16	2.5651	21 40 42.0	10.280	21	16 59 36.19	2.6875	26 36 0.5	1.691
22	14 54 46.23	2.5705	21 50 54.3	10.129	22	17 2 17.40	2.6861	26 37 36.2	1.500
23	14 57 20.62	2.5758	22 0 57.5	9.976	23	17 4 58.52	2.6844	26 39 0.5	1.309
24	14 59 55.33	2.5811	S. 22 10 51.4	9.821	24	17 7 39.53	2.6826	S. 26 40 13.3	1.118

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	17	7	39.53	2.6826	S.26	40	13.3	1.118
1	17	10	20.43	2.6807	26	41	14.7	0.928
2	17	13	1.21	2.6786	26	42	4.7	0.738
3	17	15	41.86	2.0762	26	42	43.3	0.549
4	17	18	22.36	2.6737	26	43	10.6	0.360
5	17	21	2.71	2.6711	26	43	26.5	−0.171
6	17	23	42.89	2.6682	26	43	31.1	+0.017
7	17	26	22.89	2.6652	26	43	24.4	0.204
8	17	29	2.71	2.6620	26	43	6.6	0.390
9	17	31	42.33	2.6586	26	42	37.6	0.576
10	17	34	21.74	2.6551	26	41	57.5	0.761
11	17	37	0.94	2.6514	26	41	6.3	0.946
12	17	39	39.91	2.6475	26	40	4.0	1.130
13	17	42	18.64	2.6435	26	38	50.7	1.312
14	17	44	57.13	2.6394	26	37	26.5	1.493
15	17	47	35.37	2.6351	26	35	51.5	1.674
16	17	50	13.34	2.6305	26	34	5.6	1.855
17	17	52	51.03	2.6258	26	32	8.9	2.034
18	17	55	28.44	2.6211	26	30	1.5	2.212
19	17	58	5.56	2.6162	26	27	43.5	2.388
20	18	0	42.38	2.6111	26	25	15.0	2.563
21	18	3	18.89	2.6058	26	22	36.0	2.738
22	18	5	55.08	2.6005	26	19	46.5	2.911
23	18	8	30.95	2.5950	S.26	16	46.7	3.082

TUESDAY 26.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	18	11	6.48	2.5893	S.26	13	36.6	3.253
1	18	13	41.67	2.5836	26	10	16.3	3.423
2	18	16	16.51	2.5778	26	6	45.8	3.592
3	18	18	51.00	2.5718	26	3	5.3	3.759
4	18	21	25.13	2.5657	25	59	14.8	3.925
5	18	23	58.88	2.5594	25	55	14.3	4.090
6	18	26	32.26	2.5531	25	51	4.0	4.253
7	18	29	5.26	2.5467	25	46	44.0	4.414
8	18	31	37.87	2.5402	25	42	14.3	4.574
9	18	34	10.08	2.5335	25	37	35.1	4.733
10	18	36	41.89	2.5267	25	32	46.4	4.890
11	18	39	13.29	2.5199	25	27	48.3	5.045
12	18	41	44.28	2.5130	25	22	41.0	5.199
13	18	44	14.85	2.5060	25	17	24.5	5.352
14	18	46	45.00	2.4989	25	11	58.8	5.504
15	18	49	14.72	2.4917	25	6	24.0	5.654
16	18	51	44.01	2.4845	25	0	40.3	5.802
17	18	54	12.86	2.4772	24	54	47.8	5.948
18	18	56	41.28	2.4699	24	48	46.6	6.093
19	18	59	9.25	2.4624	24	42	36.7	6.237
20	19	1	36.77	2.4549	24	36	18.2	6.378
21	19	4	3.84	2.4473	24	29	51.3	6.518
22	19	6	30.45	2.4398	24	23	16.0	6.657
23	19	8	56.61	2.4322	24	16	32.5	6.793
24	19	11	22.31	2.4245	S.24	9	40.8	6.929

WEDNESDAY 27.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	19	11	22.31	2.4245	S.24	9	40.8	6.929
1	19	13	47.55	2.4167	24	2	41.0	7.062
2	19	16	12.32	2.4089	23	55	33.3	7.194
3	19	18	36.62	2.4011	23	48	17.7	7.325
4	19	21	0.45	2.3932	23	40	54.3	7.454
5	19	23	23.81	2.3854	23	33	23.2	7.581
6	19	25	46.70	2.3775	23	25	44.6	7.706
7	19	28	9.11	2.3696	23	17	58.5	7.830
8	19	30	31.05	2.3617	23	10	5.0	7.952
9	19	32	52.51	2.3537	23	2	4.2	8.073
10	19	35	13.49	2.3457	22	53	56.2	8.192
11	19	37	34.00	2.3378	22	45	41.1	8.309
12	19	39	54.03	2.3298	22	37	19.1	8.424
13	19	42	13.58	2.3218	22	28	50.2	8.539
14	19	44	32.65	2.3138	22	20	14.4	8.652
15	19	46	51.24	2.3058	22	11	32.0	8.763
16	19	49	9.35	2.2978	22	2	43.0	8.671
17	19	51	26.98	2.2899	21	53	47.5	8.978
18	19	53	44.14	2.2820	21	44	45.6	9.085
19	19	56	0.82	2.2740	21	35	37.3	9.163
20	19	58	17.02	2.2660	21	26	22.9	9.291
21	20	0	32.74	2.2581	21	17	2.4	9.392
22	20	2	47.99	2.2502	21	7	35.9	9.492
23	20	5	2.77	2.2424	S.20	58	3.4	9.590

THURSDAY 28.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	20	7	17.08	2.2346	S.20	48	25.1	9.687
1	20	9	30.92	2.2267	20	38	41.0	9.782
2	20	11	44.29	2.2189	20	28	51.3	9.874
3	20	13	57.19	2.2112	20	18	56.1	9.966
4	20	16	9.63	2.2035	20	8	55.4	10.057
5	20	18	21.61	2.1958	19	58	49.3	10.145
6	20	20	33.13	2.1882	19	48	38.0	10.232
7	20	22	44.19	2.1806	19	38	21.5	10.318
8	20	24	54.80	2.1730	19	27	59.9	10.403
9	20	27	4.95	2.1654	19	17	33.2	10.486
10	20	29	14.65	2.1580	19	7	1.6	10.568
11	20	31	23.91	2.1506	18	56	25.3	10.645
12	20	33	32.72	2.1432	18	45	44.2	10.724
13	20	35	41.09	2.1358	18	34	58.4	10.802
14	20	37	49.02	2.1286	18	24	8.0	10.677
15	20	39	56.52	2.1213	18	13	13.2	10.950
16	20	42	3.58	2.1142	18	2	14.0	11.023
17	20	44	10.22	2.1071	17	51	10.4	11.096
18	20	46	16.43	2.1000	17	40	2.5	11.167
19	20	48	22.22	2.0930	17	28	50.4	11.235
20	20	50	27.59	2.0860	17	17	34.3	11.301
21	20	52	32.54	2.0791	17	6	14.3	11.367
22	20	54	37.08	2.0723	16	54	50.3	11.433
23	20	56	41.22	2.0656	16	43	22.4	11.497
24	20	58	44.95	2.0588	S.16	31	50.7	11.558

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 29.					SATURDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 58 44.95	2.0588	S. 16 31 50.7	11.558	0	21 46 24.22	1.9194	S. 11 39 28.1	12.699
1	21 0 48.28	2.0522	16 20 15.4	11.618	1	21 48 19.24	1.9146	11 26 45.1	12.733
2	21 2 51.22	2.0457	16 8 36.5	11.678	2	21 50 13.97	1.9098	11 14 0.1	12.767
3	21 4 53.76	2.0392	15 56 54.0	11.737	3	21 52 8.41	1.9050	11 1 13.1	12.799
4	21 6 55.92	2.0327	15 45 8.0	11.795	4	21 54 2.57	1.9004	10 48 24.2	12.830
5	21 8 57.69	2.0263	15 33 18.6	11.851	5	21 55 56.46	1.8959	10 35 33.5	12.860
6	21 10 59.08	2.0200	15 21 25.9	11.905	6	21 57 50.08	1.8914	10 22 41.0	12.890
7	21 13 0.09	2.0138	15 9 30.0	11.958	7	21 59 43.43	1.8870	10 9 46.7	12.918
8	21 15 0.74	2.0077	14 57 30.9	12.011	8	22 1 36.52	1.8827	9 56 50.8	12.946
9	21 17 1.02	2.0017	14 45 28.7	12.062	9	22 3 29.35	1.6784	9 43 53.2	12.973
10	21 19 0.94	1.9957	14 33 23.4	12.112	10	22 5 21.93	1.8743	9 30 54.0	12.999
11	21 21 0.50	1.9898	14 21 15.2	12.161	11	22 7 14.27	1.8702	9 17 53.3	13.024
12	21 22 59.71	1.9839	14 9 4.1	12.209	12	22 9 6.36	1.8662	9 4 51.1	13.048
13	21 24 58.57	1.9781	13 56 50.1	12.256	13	22 10 58.22	1.8623	8 51 47.5	13.072
14	21 26 57.08	1.9723	13 44 33.4	12.301	14	22 12 49.84	1.8584	8 38 42.5	13.094
15	21 28 55.25	1.9667	13 32 14.0	12.346	15	22 14 41.23	1.8547	8 25 36.2	13.116
16	21 30 53.09	1.9612	13 19 51.9	12.389	16	22 16 32.40	1.8511	8 12 28.6	13.137
17	21 32 50.60	1.9557	13 7 27.3	12.431	17	22 18 23.36	1.8475	7 59 19.8	13.157
18	21 34 47.77	1.9502	12 55 0.2	12.472	18	22 20 14.10	1.8439	7 46 9.8	13.176
19	21 36 44.62	1.9449	12 42 30.6	12.513	19	22 22 4.63	1.8405	7 32 58.7	13.194
20	21 38 41.16	1.9397	12 29 58.6	12.552	20	22 23 54.96	1.8372	7 19 46.5	13.212
21	21 40 37.38	1.9345	12 17 24.3	12.591	21	22 25 45.09	1.8339	7 6 33.2	13.229
22	21 42 33.30	1.9294	12 4 47.7	12.627	22	22 27 35.02	1.8307	6 53 19.0	13.244
23	21 44 28.91	1.9243	11 52 9.0	12.663	23	22 29 24.77	1.8276	6 40 3.9	13.260
24	21 46 24.22	1.9194	S. 11 39 28.1	12.699	24	22 31 14.33	1.8245	N. 6 26 47.8	13.275

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	1	9	50.6
○ Full Moon, ...	9	14	33.9
☾ Last Quarter, ...	17	5	58.4
● New Moon, ...	23	21	10.6

	d	h
☾ Apogee, ...	6	8.3
☾ Perigee, ...	22	2.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	85° 16′ 46″	3173	86° 43′ 27″	3189	88° 9′ 49″	3205	89° 35′ 52″	3220
	Antares	W.	56 15 5	2795	57 49 39	2810	59 23 54	2825	60 57 50	2839
	α Pegasi	E.	50 39 0	3095	49 10 44	3124	47 43 3	3154	46 15 59	3187
	Saturn	E.	52 36 17	2821	51 2 17	2838	49 28 38	2855	47 55 21	2871
	α Arietis	E.	91 46 59	2811	90 12 46	2826	88 38 52	2841	87 5 17	2855
2	Sun	W.	96 41 44	3291	98 6 6	3305	99 30 12	3317	100 54 4	3330
	Antares	W.	68 43 4	2904	70 15 18	2916	71 47 17	2927	73 19 1	2938
	Jupiter	W.	16 53 27	2946	18 24 47	2958	19 55 52	2970	21 26 42	2981
	α Pegasi	E.	39 10 47	3374	37 48 1	3419	36 26 6	3468	35 5 6	3522
	Saturn	E.	40 14 10	2952	38 42 57	2969	37 12 5	2985	35 41 34	3001
	α Arietis	E.	79 21 47	2920	77 49 54	2933	76 18 17	2944	74 46 54	2955
3	Sun	W.	107 50 2	3383	109 12 38	3393	110 35 3	3401	111 57 18	3410
	Antares	W.	80 54 28	2986	82 24 58	2994	83 55 18	3003	85 25 27	3010
	α Aquilæ	W.	38 49 27	5095	39 45 8	4970	40 42 27	4858	41 41 16	4756
	Jupiter	W.	28 57 34	3031	30 27 9	3039	31 56 33	3047	33 25 47	3055
	Saturn	E.	28 14 18	3094	26 46 1	3116	25 18 11	3140	23 50 50	3167
	α Arietis	E.	67 13 21	3005	65 43 15	3014	64 13 20	3022	62 43 35	3031
	Aldebaran	E.	99 25 16	3052	97 56 8	3060	96 27 10	3068	94 58 21	3075
4	Sun	W.	118 46 16	3447	120 7 39	3453	121 28 56	3459	122 50 6	3463
	Antares	W.	92 54 5	3042	94 23 26	3047	95 52 41	3051	97 21 51	3055
	α Aquilæ	W.	46 54 15	4376	47 59 58	4318	49 6 34	4266	50 13 58	4218
	Jupiter	W.	40 49 47	3087	42 18 12	3092	43 46 31	3097	45 14 44	3101
	α Arietis	E.	55 17 13	3066	53 48 22	3072	52 19 38	3078	50 51 1	3083
	Aldebaran	E.	87 36 20	3106	86 8 18	3111	84 40 22	3116	83 12 32	3121
5	Sun	W.	129 34 37	3486	130 55 17	3489	132 15 54	3491	133 36 28	3495
	α Aquilæ	W.	56 1 11	4030	57 12 21	4001	58 24 0	3972	59 36 7	3946
	Jupiter	W.	52 34 39	3118	54 2 27	3120	55 30 12	3122	56 57 55	3123
	α Arietis	E.	43 29 27	3106	42 1 25	3110	40 33 28	3114	39 5 35	3118
	Aldebaran	E.	75 54 39	3140	74 27 18	3143	73 0 0	3145	71 32 45	3148
6	α Aquilæ	W.	65 42 39	3841	66 56 59	3823	68 11 37	3807	69 26 32	3792
	Jupiter	W.	64 16 15	3124	65 43 55	3124	67 11 35	3124	68 39 15	3124
	Fomalhaut	W.	40 30 49	4029	41 42 0	3975	42 54 4	3926	44 6 57	3881
	α Arietis	E.	31 47 25	3139	30 20 3	3144	28 52 47	3150	27 25 38	3156
	Aldebaran	E.	64 17 11	3158	62 50 11	3159	61 23 13	3160	59 56 16	3162
7	Jupiter	W.	75 58 4	3113	77 25 58	3111	78 53 54	3108	80 21 54	3105
	α Aquilæ	W.	75 44 48	3727	77 1 6	3717	78 17 35	3707	79 34 15	3697
	Fomalhaut	W.	50 21 51	3703	51 38 35	3674	52 55 50	3648	54 13 33	3623
	α Pegasi	W.	28 5 11	3923	29 18 7	3845	30 32 23	3776	31 47 50	3715
	Saturn	W.	20 58 54	3248	22 24 7	3220	23 49 52	3198	25 16 3	3180
	Aldebaran	E.	52 41 57	3168	51 15 10	3170	49 48 25	3173	48 21 43	3174
	Pollux	E.	94 38 26	3083	93 9 56	3080	91 41 22	3077	90 12 44	3074
8	Jupiter	W.	87 42 53	3087	89 11 19	3082	90 39 50	3078	92 8 26	3073
	α Aquilæ	W.	85 59 52	3660	87 17 22	3654	88 34 58	3648	89 52 41	3643
	Fomalhaut	W.	60 48 19	3520	62 8 21	3503	63 28 42	3487	64 49 21	3471
	α Pegasi	W.	38 19 8	3495	39 39 38	3462	41 0 44	3433	42 22 23	3407
	Saturn	W.	32 31 49	3111	33 59 45	3101	35 27 54	3091	36 56 15	3081

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	91° 1′ 37″	3236	92° 27′ 4″	3250	93° 52′ 14″	3265	95° 17′ 7″	3278
	Antares	W.	62 31 27	2853	64 4 46	2866	65 37 48	2879	67 10 34	2891
	α Pegasi	E.	44 49 34	3220	43 23 48	3254	41 58 43	3292	40 34 22	3332
	Saturn	E.	46 22 25	2887	44 49 50	2904	43 17 36	2920	41 45 43	2936
	α Arietis	E.	85 32 0	2869	83 59 1	2883	82 26 20	2896	80 53 56	2908
2	**Sun**	W.	102 17 41	3341	103 41 5	3352	105 4 16	3363	106 27 15	3373
	Antares	W.	74 50 32	2949	76 21 49	2958	77 52 54	2968	79 23 47	2977
	Jupiter	W.	22 57 18	2992	24 27 41	3002	25 57 51	3013	27 27 48	3022
	α Pegasi	E.	33 45 6	3581	32 26 11	3647	31 8 27	3720	29 52 1	3801
	Saturn	E.	34 11 23	3018	32 41 33	3036	31 12 5	3055	29 43 0	3074
	α Arietis	E.	73 15 45	2966	71 44 50	2977	70 14 8	2987	68 43 39	2996
3	**Sun**	W.	113 19 23	3418	114 41 19	3426	116 3 6	3433	117 24 45	3440
	Antares	W.	86 55 27	3018	88 25 18	3024	89 55 1	3030	91 24 37	3036
	α Aquilæ	W.	42 41 29	4664	43 42 59	4581	44 45 40	4506	45 49 27	4437
	Jupiter	W.	34 54 52	3062	36 23 48	3069	37 52 35	3075	39 21 15	3082
	Saturn	E.	22 24 1	3197	20 57 48	3233	19 32 18	3275	18 7 37	3327
	α Arietis	E.	61 14 1	3039	59 44 36	3046	58 15 20	3052	56 46 12	3060
	Aldebaran	E.	93 29 41	3082	92 1 9	3088	90 32 45	3095	89 4 29	3101
4	**Sun**	W.	124 11 11	3469	125 32 10	3473	126 53 4	3478	128 13 53	3482
	Antares	W.	98 50 56	3059	100 19 56	3063	101 48 51	3066	103 17 42	3068
	α Aquilæ	W.	51 22 7	4174	52 30 58	4134	53 40 27	4097	54 50 32	4062
	Jupiter	W.	46 42 52	3105	48 10 55	3109	49 38 53	3112	51 6 48	3115
	α Arietis	E.	49 22 30	3088	47 54 6	3093	46 25 48	3097	44 57 35	3101
	Aldebaran	E.	81 44 48	3125	80 17 9	3129	78 49 34	3133	77 22 4	3137
5	**Sun**	W.	134 56 58	3497	136 17 25	3499	137 37 50	3501	138 58 13	3504
	α Aquilæ	W.	60 48 40	3922	62 1 37	3900	63 14 57	3879	64 28 38	3859
	Jupiter	W.	58 25 37	3124	59 53 17	3124	61 20 57	3125	62 48 36	3125
	α Arietis	E.	37 37 47	3122	36 10 4	3126	34 42 26	3130	33 14 53	3134
	Aldebaran	E.	70 5 33	3150	68 38 24	3152	67 11 17	3154	65 44 13	3156
6	α Aquilæ	W.	70 41 43	3777	71 57 9	3764	73 12 49	3751	74 28 42	3739
	Jupiter	W.	70 6 56	3122	71 34 39	3119	73 2 25	3118	74 30 13	3115
	Fomalhaut	W.	45 20 36	3839	46 34 58	3800	47 50 0	3765	49 5 39	3733
	α Arietis	E.	25 58 36	3163	24 31 43	3173	23 5 2	3185	21 38 35	3200
	Aldebaran	E.	58 29 21	3163	57 2 28	3164	55 35 36	3166	54 8 46	3167
7	Jupiter	W.	81 49 57	3102	83 18 4	3098	84 46 16	3095	86 14 32	3091
	α Aquilæ	W.	80 51 5	3689	82 8 4	3680	83 25 12	3673	84 42 28	3665
	Fomalhaut	W.	55 31 43	3599	56 50 18	3578	58 9 16	3557	59 28 37	3538
	α Pegasi	W.	33 4 21	3661	34 21 50	3612	35 40 11	3570	36 59 18	3531
	Saturn	W.	26 42 36	3163	28 9 29	3148	29 36 40	3135	31 4 7	3123
	Aldebaran	E.	46 55 3	3177	45 28 26	3179	44 1 52	3183	42 35 23	3188
	Pollux	E.	88 44 3	3071	87 15 18	3067	85 46 28	3064	84 17 34	3060
8	Jupiter	W.	93 37 8	3069	95 5 56	3065	96 34 49	3060	98 3 48	3054
	α Aquilæ	W.	91 10 29	3630	92 28 21	3635	93 46 17	3633	95 4 16	3630
	Fomalhaut	W.	66 10 18	3455	67 31 32	3442	68 53 1	3429	70 14 45	3416
	α Pegasi	W.	43 44 32	3381	45 7 10	3358	46 30 15	3336	47 53 45	3316
	Saturn	W.	38 24 48	3072	39 53 32	3064	41 22 26	3055	42 51 31	3047

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
8	Aldebaran	E.	41	8	59	3193	39	42	41	3198	38	16	29	3204	36	50	25	3213
	Pollux	E.	82	48	36	3056	81	19	33	3052	79	50	24	3047	78	21	10	3043
9	Jupiter	W.	99	32	54	3049	101	2	6	3043	102	31	25	3038	104	0	51	3033
	Fomalhaut	W.	71	36	44	3403	72	58	57	3392	74	21	23	3380	75	44	2	3369
	α Pegasi	W.	49	17	38	3296	50	41	54	3278	52	6	31	3262	53	31	27	3246
	Saturn	W.	44	20	46	3039	45	50	11	3031	47	19	45	3023	48	49	29	3015
	Aldebaran	E.	29	43	12	3283	28	18	41	3306	26	54	37	3335	25	31	6	3371
	Pollux	E.	70	53	38	3020	69	23	50	3015	67	53	56	3010	66	23	56	2005
	Regulus	E.	107	47	11	3002	106	17	1	2997	104	46	45	2992	103	16	22	2986
10	Fomalhaut	W.	82	40	12	3322	84	3	58	3314	85	27	53	3306	86	51	57	3299
	α Pegasi	W.	60	40	37	3175	62	7	16	3163	63	34	10	3151	65	1	18	3138
	Saturn	W.	56	20	31	2977	57	51	12	2970	59	22	2	2964	60	53	0	2957
	α Arietis	W.	17	2	51	3136	18	30	17	3102	19	58	24	3074	21	27	5	3051
	Pollux	E.	58	52	17	2978	57	21	37	2973	55	50	51	2968	54	19	58	2963
	Regulus	E.	95	42	38	2956	94	11	30	2950	92	40	15	2944	91	8	52	2937
11	Fomalhaut	W.	93	54	19	3268	95	19	8	3263	96	44	3	3258	98	9	4	3254
	α Pegasi	W.	72	20	24	3086	73	48	51	3076	75	17	30	3066	76	46	21	3056
	Saturn	W.	68	30	11	2919	70	2	6	2912	71	34	10	2905	73	6	23	2897
	α Arietis	W.	28	56	40	2968	30	27	33	2955	31	58	42	2943	33	30	7	2931
	Pollux	E.	46	43	54	2937	45	12	22	2931	43	40	43	2927	42	8	58	2922
	Regulus	E.	83	29	50	2904	81	57	36	2897	80	25	13	2890	78	52	41	2883
12	α Pegasi	W.	84	13	27	3012	85	43	25	3004	87	13	33	2996	88	43	51	2987
	Saturn	W.	80	49	54	2859	82	23	5	2851	83	56	27	2843	85	29	59	2835
	α Arietis	W.	41	10	40	2879	42	43	26	2869	44	16	24	2859	45	49	35	2850
	Pollux	E.	34	28	53	2904	32	56	39	2902	31	24	22	2900	29	52	3	2899
	Regulus	E.	71	7	45	2846	69	34	17	2838	68	0	39	2831	66	26	52	2824
13	Saturn	W.	93	20	13	2795	94	54	48	2786	96	29	34	2778	98	4	31	2769
	α Arietis	W.	53	38	34	2802	55	12	59	2793	56	47	36	2783	58	22	26	2774
	Aldebaran	W.	23	5	14	3201	24	31	22	3144	25	58	38	3096	27	26	53	3052
	Regulus	E.	58	35	20	2783	57	0	29	2775	55	25	28	2766	53	50	16	2757
	Spica	E.	112	38	14	2784	111	3	25	2775	109	28	25	2766	107	53	13	2758
	Sun	E.	141	19	31	3179	139	52	57	3168	138	26	10	3156	136	59	8	3145
14	α Arietis	W.	66	19	44	2725	67	55	51	2715	69	32	11	2705	71	8	45	2695
	Aldebaran	W.	34	59	36	2898	36	31	57	2874	38	4	49	2852	39	38	10	2831
	Regulus	E.	45	51	20	2713	44	14	57	2701	42	38	22	2694	41	1	34	2685
	Spica	E.	99	54	16	2712	98	17	52	2702	96	41	15	2692	95	4	24	2681
	Sun	E.	129	40	33	3087	128	12	8	3077	126	43	30	3065	125	14	37	3053
15	α Arietis	W.	79	15	3	2641	80	53	2	2631	82	31	15	2620	84	9	43	2608
	Aldebaran	W.	47	31	13	2741	49	6	59	2724	50	43	7	2708	52	19	36	2692
	Regulus	E.	32	54	27	2638	31	16	23	2628	29	38	6	2618	27	59	36	2609
	Spica	E.	86	56	46	2630	85	18	32	2620	83	40	4	2609	82	1	21	2598
	Sun	E.	117	46	36	2993	116	16	15	2981	114	45	39	2969	113	14	48	2957
16	Aldebaran	W.	60	27	7	2618	62	5	37	2604	63	44	27	2590	65	23	36	2576
	Pollux	W.	18	9	39	2719	19	45	53	2680	21	22	59	2646	23	0	51	2616
	Spica	E.	73	43	56	2541	72	3	40	2529	70	23	7	2517	68	42	18	2506

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
8	Aldebaran	E.	35° 24′ 31″	3222	33° 58′ 48″	3234	32° 33′ 19″	3248	31° 8′ 6″	3264
	Pollux	E.	76 51 51	3039	75 22 26	3034	73 52 56	3030	72 23 20	3025
9	Jupiter	W.	105 30 23	3027	107 0 2	3021	108 29 49	3015	109 59 43	3009
	Fomalhaut	W.	77 6 54	3359	78 29 57	3350	79 53 11	3340	81 16 36	3331
	α Pegasi	W.	54 56 42	3230	56 22 16	3215	57 48 7	3202	59 14 14	3188
	Saturn	W.	50 19 23	3008	51 49 26	3001	53 19 38	2993	54 50 0	2985
	Aldebaran	E.	24 8 16	3414	22 46 15	3466	21 25 13	3531	20 5 23	3615
	Pollux	E.	64 53 49	3000	63 23 36	2994	61 53 16	2989	60 22 50	2984
	Regulus	E.	101 45 52	2981	100 15 15	2974	98 44 30	2969	97 13 38	2962
10	Fomalhaut	W.	88 16 10	3292	89 40 31	3285	91 5 0	3279	92 29 36	3273
	α Pegasi	W.	66 28 41	3127	67 56 18	3116	69 24 8	3106	70 52 10	3096
	Saturn	W.	62 24 7	2949	63 55 24	2942	65 26 50	2934	66 58 26	2927
	α Arietis	W.	22 56 15	3031	24 25 50	3013	25 55 47	2997	27 26 4	2981
	Pollux	E.	52 48 59	2958	51 17 53	2952	49 46 40	2946	48 15 20	2942
	Regulus	E.	89 37 20	2931	88 5 40	2924	86 33 52	2917	85 1 55	2911
11	Fomalhaut	W.	99 34 9	3251	100 59 18	3247	102 24 31	3244	103 49 48	3242
	α Pegasi	W.	78 15 24	3047	79 44 38	3038	81 14 3	3029	82 43 40	3021
	Saturn	W.	74 38 46	2889	76 11 19	2882	77 44 1	2874	79 16 53	2867
	α Arietis	W.	35 1 46	2920	36 33 39	2909	38 5 46	2898	39 38 7	2889
	Pollux	E.	40 37 7	2918	39 5 11	2913	37 33 9	2910	36 1 3	2907
	Regulus	E.	77 20 1	2876	75 47 12	2869	74 14 13	2861	72 41 4	2853
12	α Pegasi	W.	90 14 20	2979	91 44 59	2971	93 15 48	2964	94 46 46	2956
	Saturn	W.	87 3 41	2828	88 37 33	2819	90 11 36	2811	91 45 49	2803
	α Arietis	W.	47 22 58	2841	48 56 33	2831	50 30 21	2821	52 4 21	2811
	Pollux	E.	28 19 43	2900	26 47 24	2901	25 15 7	2905	23 42 55	2914
	Regulus	E.	64 52 55	2815	63 18 47	2808	61 44 29	2799	60 10 0	2791
13	Saturn	W.	99 39 39	2761	101 14 58	2752	102 50 29	2744	104 26 11	2735
	α Arietis	W.	59 57 28	2764	61 32 43	2755	63 8 10	2745	64 43 50	2735
	Aldebaran	W.	28 56 1	3014	30 25 56	2981	31 56 33	2951	33 27 47	2924
	Regulus	E.	52 14 52	2749	50 39 17	2740	49 3 30	2731	47 27 31	2722
	Spica	E.	106 17 50	2749	104 42 15	2740	103 6 28	2730	101 30 28	2721
	Sun	E.	135 31 53	3133	134 4 24	3122	132 36 41	3110	131 8 44	3099
14	α Arietis	W.	72 45 32	2684	74 22 33	2673	75 59 49	2663	77 37 19	2652
	Aldebaran	W.	41 11 58	2811	42 46 11	2793	44 20 48	2775	45 55 49	2757
	Regulus	E.	39 24 34	2675	37 47 21	2666	36 9 56	2657	34 32 18	2647
	Spica	E.	93 27 19	2672	91 50 1	2662	90 12 30	2652	88 34 45	2641
	Sun	E.	123 45 30	3041	122 16 8	3030	120 46 32	3018	119 16 41	3006
15	α Arietis	W.	85 48 27	2597	87 27 26	2586	89 6 40	2574	90 46 10	2563
	Aldebaran	W.	53 56 26	2678	55 33 36	2662	57 11 7	2648	58 48 57	2633
	Regulus	E.	26 20 53	2599	24 41 57	2590	23 2 48	2582	21 23 28	2574
	Spica	E.	80 22 23	2587	78 43 10	2575	77 3 41	2564	75 23 56	2553
	Sun	E.	111 43 41	2945	110 12 19	2932	108 40 40	2919	107 8 45	2906
16	Aldebaran	W.	67 3 4	2561	68 42 52	2548	70 22 59	2534	72 3 25	2520
	Pollux	W.	24 39 24	2590	26 18 33	2567	27 58 14	2545	29 38 25	2524
	Spica	E.	67 1 13	2494	65 19 51	2482	63 38 12	2470	61 56 16	2457

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	Sun	E.	105° 36′ 34″	2893	104° 4′ 6″	2880	102° 31′ 22″	2867	100° 58′ 21″	2854
17	Aldebaran	W.	73 44 10	2507	75 25 14	2493	77 6 37	2480	78 48 19	2466
	Pollux	W.	31 19 5	2505	33 0 12	2487	34 41 44	2469	36 23 41	2451
	Spica	E.	60 14 2	2445	58 31 31	2433	56 48 43	2421	55 5 38	2409
	Sun	E.	93 8 58	2787	91 34 13	2773	89 59 10	2760	88 23 49	2746
18	Aldebaran	W.	87 21 30	2401	89 5 3	2389	90 48 54	2376	92 33 3	2364
	Pollux	W.	44 59 15	2374	46 43 27	2359	48 28 0	2345	50 12 54	2331
	Spica	E.	46 25 50	2348	44 41 0	2336	42 55 53	2324	41 10 29	2313
	Sun	E.	80 22 35	2678	78 45 26	2666	77 8 0	2652	75 30 15	2639
19	Pollux	W.	59 2 21	2265	60 49 12	2253	62 36 21	2241	64 23 47	2230
	Regulus	W.	22 0 28	2264	23 47 21	2249	25 34 36	2235	27 22 11	2223
	Spica	E.	32 19 25	2260	30 32 27	2251	28 45 15	2242	26 57 50	2235
	Sun	E.	67 17 11	2576	65 37 43	2564	63 57 59	2553	62 17 59	2542
20	Pollux	W.	73 25 8	2177	75 14 10	2167	77 3 27	2158	78 52 57	2149
	Regulus	W.	36 24 39	2166	38 13 58	2156	40 3 32	2147	41 53 20	2138
	Sun	E.	53 54 15	2491	52 12 49	2482	50 31 10	2474	48 49 20	2467
21	Pollux	W.	88 3 29	2115	89 54 5	2109	91 44 50	2105	93 35 42	2100
	Regulus	W.	51 5 25	2101	52 56 22	2096	54 47 27	2091	56 38 40	2086
	Sun	E.	40 17 49	2438	38 35 9	2435	36 52 25	2433	35 9 37	2432
22	Pollux	W.	102 51 21	2088	104 42 38	2088	106 33 55	2089	108 25 11	2090
	Regulus	W.	65 56 13	2073	67 47 54	2072	69 39 36	2072	71 31 18	2072
26	Sun	W.	28 28 37	2735	30 4 30	2747	31 40 7	2761	33 15 26	2776
	Fomalhaut	E.	60 46 54	2858	59 13 41	2893	57 41 13	2931	56 9 33	2971
	α Pegasi	E.	80 52 41	2521	79 11 57	2540	77 31 39	2559	75 51 47	2579
	Saturn	E.	83 33 3	2375	81 48 52	2392	80 5 6	2410	78 21 45	2427
27	Sun	W.	41 6 53	2859	42 40 5	2876	44 12 55	2894	45 45 22	2919
	Fomalhaut	E.	48 44 44	3212	47 18 49	3270	45 54 3	3333	44 30 30	3401
	α Pegasi	E.	67 39 32	2686	66 2 33	2709	64 26 5	2733	62 50 9	2758
	Saturn	E.	69 51 19	2518	68 10 31	2538	66 30 10	2556	64 50 15	2574
	α Arietis	E.	109 43 51	2507	108 2 47	2524	106 22 7	2542	104 41 52	2559
28	Sun	W.	53 21 51	3003	54 52 0	3022	56 21 46	3040	57 51 9	3058
	Fomalhaut	E.	37 54 2	3842	36 39 43	3956	35 27 20	4084	34 17 3	4227
	α Pegasi	E.	54 58 44	2889	53 26 11	2917	51 54 14	2947	50 22 55	2977
	Saturn	E.	56 37 8	2671	54 59 49	2690	53 22 56	2709	51 46 28	2728
	α Arietis	E.	96 26 42	2648	94 48 52	2666	93 11 26	2683	91 34 24	2700
29	Sun	W.	65 12 38	3145	66 39 53	3163	68 6 47	3179	69 33 21	3195
	α Pegasi	E.	42 56 23	3152	41 29 16	3193	40 2 58	3236	38 37 32	3283
	Saturn	E.	43 50 32	2825	42 16 37	2845	40 43 7	2864	39 10 2	2884
	α Arietis	E.	83 34 49	2784	82 0 0	2799	80 25 31	2815	78 51 22	2831
30	Sun	W.	76 41 31	3271	78 6 16	3285	79 30 45	3299	80 54 58	3312
	Saturn	E.	31 31 7	2989	30 0 41	3013	28 30 44	3037	27 1 17	3063
	α Arietis	E.	71 5 32	2903	69 33 17	2916	68 1 18	2929	66 29 36	2942

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Sun	E.	99° 25′ 3″	2841	97° 51′ 28″	2827	96° 17′ 35″	2814	94° 43′ 25″	2801
17	Aldebaran	W.	80 30 20	2453	82 12 40	2440	83 55 18	2426	85 38 15	2414
	Pollux	W.	38 6 3	2435	39 48 48	2419	41 31 55	2404	43 15 24	2389
	Spica	E.	53 22 16	2396	51 38 36	2384	49 54 38	2372	48 10 23	2360
	Sun	E.	86 48 10	2733	85 12 14	2719	83 35 59	2705	81 59 26	2692
18	Aldebaran	W.	94 17 30	2352	96 2 14	2340	97 47 15	2329	99 32 32	2318
	Pollux	W.	51 58 8	2317	53 43 42	2304	55 29 36	2291	57 15 49	2278
	Spica	E.	39 24 48	2302	37 38 51	2291	35 52 38	2280	34 6 9	2270
	Sun	E.	73 52 13	2626	72 13 53	2613	70 35 16	2601	68 56 22	2588
19	Pollux	W.	66 11 30	2218	67 59 30	2207	69 47 47	2196	71 36 20	2186
	Regulus	W.	29 10 5	2210	30 58 18	2198	32 46 48	2187	34 35 35	2176
	Spica	E.	25 10 14	2228	23 22 28	2223	21 34 34	2219	19 46 34	2218
	Sun	E.	60 37 44	2530	58 57 13	2520	57 16 28	2510	55 35 28	2500
20	Pollux	W.	80 42 41	2141	82 32 37	2134	84 22 44	2127	86 13 2	2121
	Regulus	W.	43 43 21	2130	45 33 35	2122	47 24 1	2115	49 14 38	2108
	Sun	E.	47 7 20	2459	45 25 9	2453	43 42 50	2448	42 0 23	2443
21	Pollux	W.	95 26 41	2097	97 17 45	2094	99 8 54	2092	101 0 6	2090
	Regulus	W.	58 30 1	2082	60 21 28	2079	62 12 59	2077	64 4 34	2074
	Sun	E.	33 26 48	2432	31 43 59	2433	30 1 12	2437	28 18 30	2442
22	Pollux	W.	110 16 25	2092	112 7 37	2094	113 58 45	2097	115 49 48	2101
	Regulus	W.	73 23 0	2073	75 14 40	2075	77 6 17	2078	78 57 50	2081
26	Sun	W.	34 50 25	2792	36 25 4	2808	37 59 22	2825	39 33 18	2841
	Fomalhaut	E.	54 38 44	3014	53 8 48	3058	51 39 47	3106	50 11 45	3157
	α Pegasi	E.	74 12 23	2599	72 33 27	2620	70 54 59	2642	69 17 1	2663
	Saturn	E.	76 38 49	2445	74 56 18	2463	73 14 13	2481	71 32 33	2499
27	Sun	W.	47 17 26	2930	48 49 7	2948	50 20 25	2966	51 51 20	2985
	Fomalhaut	E.	43 8 15	3475	41 47 23	3555	40 27 59	3642	39 10 10	3737
	α Pegasi	E.	61 14 46	2782	59 39 55	2808	58 5 37	2834	56 31 53	2861
	Saturn	E.	63 10 45	2593	61 31 41	2613	59 53 4	2632	58 14 53	2652
	α Arietis	E.	103 2 1	2577	101 22 35	2595	99 43 33	2613	98 4 56	2630
28	Sun	W.	59 20 10	3076	60 48 49	3093	62 17 7	3111	63 45 3	3129
	Fomalhaut	E.	33 9 2	4387	32 3 29	4566	31 0 35	4770	30 0 34	5000
	α Pegasi	E.	48 52 14	3009	47 22 13	3043	45 52 53	3078	44 24 16	3114
	Saturn	E.	50 10 26	2747	48 34 49	2767	46 59 38	2786	45 24 52	2806
	α Arietis	E.	89 57 44	2717	88 21 26	2734	86 45 31	2751	85 9 59	2768
29	Sun	W.	70 59 36	3211	72 25 32	3227	73 51 9	3242	75 16 29	3257
	α Pegasi	E.	37 13 1	3333	35 49 28	3386	34 26 56	3445	33 5 30	3510
	Saturn	E.	37 37 23	2904	36 5 9	2925	34 33 22	2946	33 2 1	2967
	α Arietis	E.	77 17 34	2846	75 44 6	2860	74 10 56	2875	72 38 5	2889
30	Sun	W.	82 18 56	3325	83 42 39	3337	85 6 8	3349	86 29 23	3359
	Saturn	E.	25 32 22	3091	24 4 2	3123	22 36 20	3158	21 9 20	3198
	α Arietis	E.	64 58 10	2954	63 26 59	2966	61 56 4	2977	60 25 23	2989

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	16 30 2.56	10.803	S. 21 50 46.7	−23.16	16 15.98	70.31	10 46.00	0.946
Mon.	2	16 34 22.17	10.830	21 59 50.1	22.11	16 16.13	70.40	10 23.00	0.971
Tues.	3	16 38 42.40	10.854	22 8 28.1	21.05	16 16.28	70.48	9 59.40	0.995
Wed.	4	16 43 3.19	10.878	22 16 40.3	19.97	16 16.42	70.56	9 35.23	1.018
Thur.	5	16 47 24.52	10.900	22 24 26.6	18.89	16 16.56	70.64	9 10.52	1.040
Frid.	6	16 51 46.38	10.922	22 31 46.7	17.79	16 16.70	70.71	8 45.29	1.062
Sat.	7	16 56 8.76	10.942	22 38 40.5	16.68	16 16.83	70.78	8 19.54	1.082
Sun.	8	17 0 31.63	10.962	22 45 7.6	15.57	16 16.95	70.84	7 53.30	1.102
Mon.	9	17 4 54.95	10.980	22 51 7.8	14.45	16 17.07	70.90	7 26.62	1.121
Tues.	10	17 9 18.71	10.998	22 56 41.1	13.32	16 17.18	70.96	6 59.50	1.139
Wed.	11	17 13 42.89	11.014	23 1 47.2	12.18	16 17.28	71.01	6 31.96	1.156
Thur.	12	17 18 7.45	11.030	23 6 25.9	11.04	16 17.38	71.06	6 4.03	1.171
Frid.	13	17 22 32.37	11.044	23 10 37.2	9.87	16 17.48	71.11	5 35.74	1.185
Sat.	14	17 26 57.60	11.058	23 14 20.8	8.75	16 17.57	71.15	5 7.12	1.198
Sun.	15	17 31 23.14	11.070	23 17 36.5	7.59	16 17.65	71.18	4 38.22	1.210
Mon.	16	17 35 48.98	11.080	23 20 24.2	6.42	16 17.73	71.21	4 9.04	1.220
Tues.	17	17 40 15.03	11.091	23 22 43.9	5.23	16 17.80	71.24	3 39.63	1.229
Wed.	18	17 44 41.28	11.099	23 24 35.5	4.06	16 17.87	71.26	3 10.02	1.237
Thur.	19	17 49 7.72	11.105	23 25 58.8	2.90	16 17.93	71.28	2 40.23	1.244
Frid.	20	17 53 34.29	11.109	23 26 53.8	1.71	16 17.99	71.29	2 10.30	1.249
Sat.	21	17 58 0.95	11.112	23 27 20.5	− 0.53	16 18.05	71.30	1 40.27	1.252
Sun.	22	18 2 27.67	11.113	23 27 18.9	+ 0.65	16 18.10	71.30	1 10.19	1.253
Mon.	23	18 6 54.39	11.113	23 26 49.0	1.83	16 18.15	71.30	0 40.10	1.253
Tues.	24	18 11 21.10	11.111	23 25 50.8	3.01	16 18.19	71.29	0 10.02	1.251
Wed.	25	18 15 47.76	11.108	23 24 24.2	4.19	16 18.23	71.28	0 19.98	1.248
Thur.	26	18 20 14.32	11.103	23 22 29.3	5.36	16 18.27	71.27	0 49.90	1.243
Frid.	27	18 24 40.73	11.097	23 20 6.2	6.54	16 18.30	71.25	1 19.67	1.237
Sat.	28	18 29 6.97	11.089	23 17 15.0	7.71	16 18.33	71.23	1 49.28	1.229
Sun.	29	18 33 33.00	11.080	23 13 55.7	8.88	16 18.36	71.20	2 18.67	1.220
Mon.	30	18 37 58.79	11.069	23 10 8.4	10.05	16 18.38	71.17	2 47.83	1.209
Tues.	31	18 42 24.31	11.057	23 5 53.4	11.22	16 18.39	71.13	3 16.70	1.197
Wed.	32	18 46 49.52	11.043	S. 23 1 10.7	+12.36	16 18.40	71.09	3 45.26	1.183

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sidereal Time.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be added to* *subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time or Right Ascension of *Mean* Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	16 30 4.50	10.801	S.21 50 50.8	−23.15	10 45.83	0.946	16 40 50.33
Mon.	2	16 34 24.05	10.827	21 59 53.9	22.10	10 22.83	0.971	16 44 46.88
Tues.	3	16 38 44.21	10.851	22 8 31.6	21.04	9 59.23	0.995	16 48 43.44
Wed.	4	16 43 4.93	10.875	22 16 43.5	19.96	9 35.07	1.018	16 52 40.00
Thur.	5	16 47 26.19	10.897	22 24 29.5	18.88	9 10.36	1.040	16 56 36.56
Frid.	6	16 51 47.98	10.919	22 31 49.3	17.78	8 45.13	1.062	17 0 33.11
Sat.	7	16 56 10.28	10.939	22 38 42.8	16.67	8 19.39	1.082	17 4 29.67
Sun.	8	17 0 33.07	10.959	22 45 9.6	15.56	7 53.16	1.102	17 8 26.23
Mon.	9	17 4 56.31	10.977	22 51 9.6	14.44	7 26.48	1.121	17 12 22.79
Tues.	10	17 9 19.99	10.995	22 56 42.7	13.31	6 59.36	1.139	17 16 19.35
Wed.	11	17 13 44.08	11.011	23 1 48.5	12.17	6 31.83	1.156	17 20 15.91
Thur.	12	17 18 8.56	11.027	23 6 27.0	11.03	6 3.91	1.171	17 24 12.47
Frid.	13	17 22 33.40	11.041	23 10 38.1	9.88	5 35.63	1.185	17 28 9.03
Sat.	14	17 26 58.55	11.055	23 14 21.5	8.73	5 7.03	1.198	17 32 5.58
Sun.	15	17 31 24.00	11.067	23 17 37.0	7.57	4 38.13	1.210	17 36 2.14
Mon.	16	17 35 49.75	11.078	23 20 24.6	6.40	4 8.95	1.220	17 39 58.70
Tues.	17	17 40 15.71	11.087	23 22 44.2	5.23	3 39.55	1.229	17 43 55.26
Wed.	18	17 44 41.87	11.095	23 24 35.7	4.06	3 9.95	1.237	17 47 51.82
Thur.	19	17 49 8.21	11.101	23 25 58.9	2.89	2 40.17	1.244	17 51 48.38
Frid.	20	17 53 34.69	11.105	23 26 53.9	1.71	2 10.25	1.249	17 55 44.94
Sat.	21	17 58 1.26	11.108	23 27 20.5	− 0.53	1 40.23	1.252	17 59 41.50
Sun.	22	18 2 27.89	11.109	23 27 18.9	+ 0.65	1 10.16	1.253	18 3 38.05
Mon.	23	18 6 54.52	11.109	23 26 49.0	1.83	0 40.09	1.253	18 7 34.61
Tues.	24	18 11 21.14	11.107	23 25 50.8	3.01	0 10.03	1.251	18 11 31.17
Wed.	25	18 15 47.70	11.104	23 24 24.3	4.19	0 19.97	1.248	18 15 27.73
Thur.	26	18 20 14.17	11.099	23 22 29.4	5.36	0 49.88	1.243	18 19 24.29
Frid.	27	18 24 40.49	11.093	23 20 6.4	6.54	1 19.64	1.237	18 23 20.85
Sat.	28	18 29 6.64	11.085	23 17 15.3	7.71	1 49.24	1.229	18 27 17.40
Sun.	29	18 33 32.58	11.076	23 13 56.1	8.88	2 18.62	1.220	18 31 13.96
Mon.	30	18 37 58.29	11.065	23 10 8.9	10.05	2 47.77	1.209	18 35 10.52
Tues.	31	18 42 23.71	11.053	23 5 54.0	11.21	3 16.63	1.197	18 39 7.08
Wed.	32	18 46 48.83	11.039	S.23 1 11.5	+12.35	3 45.19	1.183	18 43 3.64

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

+ prefixed to the hourly change of declination indicates that the south declinations are decreasing.

Diff. for 1 hour.
$+9^{s}.8565$
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	335	249 13 2.7	12 3.8	152.16	+0.12	9.9937363	−29.0	7 17 57.73
2	336	250 13 55.0	12 56.0	152.19	0.23	.9936675	28.2	7 14 1.82
3	337	251 14 48.0	13 48.8	152.23	0.32	.9936008	27.4	7 10 5.91
4	338	252 15 41.9	14 42.5	152.26	0.38	.9935362	26.5	7 6 10.00
5	339	253 16 36.6	15 37.0	152.30	0.41	.9934737	25.5	7 2 14.08
6	340	254 17 32.1	16 32.3	152.33	0.42	.9934136	24.5	6 58 18.17
7	341	255 18 28.3	17 28.4	152.36	0.39	.9933560	23.4	6 54 22.26
8	342	256 19 25.2	18 25.1	152.39	0.33	.9933010	22.3	6 50 26.34
9	343	257 20 23.0	19 22.7	152.4[illegible]	0.25	.9932486	21.2	6 46 30.43
10	344	258 21 21.7	20 21.2	152.46	0.15	.9931989	20.1	6 42 34.52
11	345	259 22 21.3	21 20.6	152.50	+0.02	.9931519	19.0	6 38 38.61
12	346	260 23 21.8	22 20.9	152.54	−0.12	.9931074	18.0	6 34 42.69
13	347	261 24 23.2	23 22.1	152.58	0.26	.9930656	16.9	6 30 46.78
14	348	262 25 25.6	24 24.3	152.62	0.39	.9930263	15.9	6 26 50.87
15	349	263 26 29.0	25 27.5	152.66	0.52	.9929894	14.9	6 22 54.96
16	350	264 27 33.3	26 31.6	152.70	0.63	.9929549	13.9	6 18 59.04
17	351	265 28 38.4	27 36.6	152.73	0.72	.9929226	13.0	6 15 3.12
18	352	266 29 44.3	28 42.3	152.76	0.78	.9928923	12.2	6 11 7.21
19	353	267 30 51.1	29 48.9	152.80	0.81	.9928640	11.4	6 7 11.30
20	354	268 31 58.6	30 56.2	152.83	0.81	.9928376	10.6	6 3 15.38
21	355	269 33 6.9	32 4.3	152.86	0.77	.9928131	9.8	5 59 19.47
22	356	270 34 15.8	33 13.0	152.88	0.70	.9927904	9.1	5 55 23.56
23	357	271 35 25.1	34 22.1	152.90	0.61	.9927693	8.4	5 51 27.65
24	358	272 36 34.8	35 31.6	152.92	0.51	.9927497	7.8	5 47 31.73
25	359	273 37 44.9	36 41.5	152.93	0.39	.9927318	7.1	5 43 35.82
26	360	274 38 55.3	37 51.7	152.93	0.26	.9927157	6.4	5 39 39.91
27	361	275 40 5.7	39 1.9	152.93	−0.13	.9927012	5.6	5 35 44.00
28	362	276 41 16.1	40 12.1	152.93	0.00	.9926885	4.9	5 31 48.08
29	363	277 42 26.4	41 22.2	152.93	+0.11	.9926776	4.1	5 27 52.17
30	364	278 43 36.6	42 32.2	152.92	0.20	.9926687	3.3	5 23 56.26
31	365	279 44 46.6	43 42.0	152.92	0.27	.9926620	2.3	5 20 0.35
32	366	280 45 56.4	44 51.6	152.91	+0.31	9.9926576	− 1.4	5 16 4.43

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0ᵈ.0.

Diff. for 1 hour.
—9ˢ.8296
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 58.9	14 55.1	54 52.2	−1.25	54 38.4	−1.04	6 0.3	1.69	7.1
2	14 52.1	14 49.7	54 27.2	0.82	54 18.6	0.61	6 40.3	1.65	8.1
3	14 48.1	14 47.1	54 12.6	−0.40	54 9.0	−0.20	7 19.9	1.66	9.1
4	14 46.8	14 47.1	54 7.8	0.00	54 9.1	+0.19	8 0.2	1.71	10.1
5	14 48.0	14 49.6	54 12.4	+0.37	54 17.9	0.53	8 42.3	1.81	11.1
6	14 51.5	14 53.9	54 25.1	0.67	54 33.9	0.80	9 27.1	1.93	12.1
7	14 56.7	14 59.9	54 44.3	0.91	54 55.8	1.01	10 15.1	2.07	13.1
8	15 3.3	15 6.9	55 8.3	1.08	55 21.7	1.14	11 6.4	2.20	14.1
9	15 10.7	15 14.6	55 35.6	1.18	55 50.0	1.21	12 0.3	2.29	15.1
10	15 18.6	15 22.6	56 4.6	1.23	56 19.4	1.23	12 55.5	2.30	16.1
11	15 26.6	15 30.6	56 34.1	1.22	56 48.8	1.21	13 50.4	2.26	17.1
12	15 34.6	15 38.4	57 3.2	1.20	57 17.5	1.18	14 43.6	2.17	18.1
13	15 42.2	15 46.0	57 31.5	1.15	57 45.2	1.13	15 34.6	2.08	19.1
14	15 49.6	15 53.2	57 58.5	1.10	58 11.6	1.07	16 23.5	2.01	20.1
15	15 56.6	16 0.0	58 24.3	1.04	58 36.6	1.00	17 11.2	1.98	21.1
16	16 3.2	16 6.2	58 48.3	0.96	58 59.5	0.90	17 58.8	2.00	22.1
17	16 9.1	16 11.6	59 9.9	0.83	59 19.4	0.74	18 47.6	2.09	23.1
18	16 13.9	16 15.7	59 27.7	0.63	59 34.5	0.50	19 38.8	2.21	24.1
19	16 17.1	16 18.0	59 39.6	+0.35	59 42.8	+0.17	20 33.6	2.37	25.1
20	16 18.2	16 17.9	59 43.7	−0.02	59 42.2	−0.23	21 32.2	2.51	26.1
21	16 16.7	16 14.9	59 38.1	0.46	59 31.2	0.69	22 33.6	2.59	27.1
22	16 12.2	16 9.0	59 21.6	0.91	59 9.4	1.13	23 35.8	2.57	28.1
23	16 4.9	16 0.3	58 54.7	1.32	58 37.7	[illegible]50	δ		29.1
24	15 55.1	15 49.6	58 18.8	1.65	57 58.3	1.76	0 36.0	2.43	0.6
25	15 43.7	15 37.6	57 36.6	1.84	57 14.3	1.88	1 32.2	2.24	1.6
26	15 31.4	15 25.3	56 51.7	1.88	56 29.3	1.85	2 23.7	2.04	2.6
27	15 19.4	15 13.8	56 7.6	1.77	55 46.9	1.66	3 10.7	1.87	3.6
28	15 8.5	15 3.8	55 27.7	1.53	55 10.2	1.38	3 54.2	1.75	4.6
29	14 59.5	14 55.9	54 54.7	1.20	54 41.4	1.01	4 35.4	1.68	5.6
30	14 52.9	14 50.7	54 30.5	0.80	54 22.1	0.59	5 15.5	1.66	6.6
31	14 49.1	14 48.3	54 16.4	−0.37	54 13.3	−0.15	5 55.6	1.69	7.6
32	14 48.2	14 48.8	54 12.9	+0.07	54 15.1	+0.29	6 36.9	1.76	8.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 31 14.33	1.8245	S. 6 26 47.8	13.275
1	22 33 3.71	1.8216	6 13 30.9	13.288
2	22 34 52.92	1.8187	6 0 13.2	13.301
3	22 36 41.95	1.8158	5 46 54.8	13.313
4	22 38 30.82	1.8132	5 33 35.7	13.325
5	22 40 19.53	1.8106	5 20 15.8	13.337
6	22 42 8.09	1.8081	5 6 55.3	13.346
7	22 43 56.50	1.8056	4 53 34.3	13.355
8	22 45 44.76	1.8031	4 40 12.7	13.364
9	22 47 32.87	1.8008	4 26 50.6	13.372
10	22 49 20.85	1.7986	4 13 28.1	13.378
11	22 51 8.70	1.7964	4 0 5.2	13.385
12	22 52 56.42	1.7943	3 46 41.9	13.391
13	22 54 44.02	1.7923	3 33 18.3	13.396
14	22 56 31.50	1.7903	3 19 54.4	13.401
15	22 58 18.86	1.7885	3 6 30.2	13.405
16	23 0 6.12	1.7867	2 53 5.8	13.408
17	23 1 53.28	1.7851	2 39 41.3	13.410
18	23 3 40.33	1.7834	2 26 16.6	13.412
19	23 5 27.29	1.7819	2 12 51.9	13.413
20	23 7 14.16	1.7805	1 59 27.1	13.413
21	23 9 0.95	1.7792	1 46 2.3	13.413
22	23 10 47.66	1.7778	1 32 37.6	13.412
23	23 12 34.29	1.7765	S. 1 19 12.9	13.411

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 14 20.84	1.7753	S. 1 5 48.3	13.408
1	23 16 7.33	1.7743	0 52 23.9	13.405
2	23 17 53.76	1.7733	0 38 59.7	13.402
3	23 19 40.13	1.7724	0 25 35.7	13.398
4	23 21 26.45	1.7716	S. 0 12 11.9	13.393
5	23 23 12.72	1.7708	N. 0 1 11.5	13.388
6	23 24 58.95	1.7702	0 14 34.6	13.382
7	23 26 45.14	1.7695	0 27 57.3	13.375
8	23 28 31.29	1.7689	0 41 19.6	13.367
9	23 30 17.41	1.7684	0 54 41.4	13.359
10	23 32 3.50	1.7681	1 8 2.7	13.351
11	23 33 49.58	1.7678	1 21 23.5	13.342
12	23 35 35.64	1.7676	1 34 43.8	13.332
13	23 37 21.69	1.7674	1 48 3.4	13.322
14	23 39 7.73	1.7672	2 1 22.4	13.311
15	23 40 53.76	1.7672	2 14 40.7	13.299
16	23 42 39.80	1.7673	2 27 58.3	13.287
17	23 44 25.84	1.7674	2 41 15.1	13.273
18	23 46 11.89	1.7677	2 54 31.1	13.260
19	23 47 57.96	1.7680	3 7 46.3	13.246
20	23 49 44.05	1.7683	3 21 0.6	13.231
21	23 51 30.16	1.7687	3 34 14.0	13.216
22	23 53 16.29	1.7692	3 47 26.5	13.200
23	23 55 2.46	1.7698	4 0 38.0	13.183
24	23 56 48.67	1.7705	N. 4 13 48.4	13.165

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 56 48.67	1.7705	N. 4 13 48.4	13.165
1	23 58 34.92	1.7712	4 26 57.8	13.147
2	0 0 21.21	1.7719	4 40 6.1	13.128
3	0 2 7.55	1.7727	4 53 13.2	13.109
4	0 3 53.94	1.7737	5 6 19.2	13.090
5	0 5 40.39	1.7748	5 19 24.0	13.069
6	0 7 26.91	1.7759	5 32 27.5	13.047
7	0 9 13.50	1.7770	5 45 29.7	13.026
8	0 11 0.15	1.7781	5 58 30.6	13.004
9	0 12 46.87	1.7793	6 11 30.2	12.981
10	0 14 33.67	1.7807	6 24 28.3	12.957
11	0 16 20.56	1.7822	6 37 25.0	12.932
12	0 18 7.54	1.7837	6 50 20.2	12.907
13	0 19 54.61	1.7853	7 3 13.9	12.882
14	0 21 41.78	1.7869	7 16 6.0	12.855
15	0 23 29.04	1.7886	7 28 56.5	12.828
16	0 25 16.41	1.7904	7 41 45.4	12.801
17	0 27 3.89	1.7922	7 54 32.6	12.772
18	0 28 51.47	1.7940	8 7 18.0	12.742
19	0 30 39.17	1.7961	8 20 1.7	12.713
20	0 32 27.00	1.7982	8 32 43.6	12.683
21	0 34 14.95	1.8003	8 45 23.7	12.652
22	0 36 3.03	1.8024	8 58 1.9	12.620
23	0 37 51.24	1.8047	N. 9 10 38.1	12.588

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 39 39.59	1.8070	N. 9 23 12.4	12.555
1	0 41 28.08	1.8094	9 35 44.7	12.521
2	0 43 16.72	1.8118	9 48 14.9	12.486
3	0 45 5.50	1.8142	10 0 43.0	12.451
4	0 46 54.43	1.8168	10 13 9.0	12.415
5	0 48 43.52	1.8195	10 25 32.8	12.378
6	0 50 32.77	1.8222	10 37 54.4	12.341
7	0 52 22.19	1.8250	10 50 13.7	12.303
8	0 54 11.77	1.8278	11 2 30.7	12.264
9	0 56 1.52	1.8307	11 14 45.4	12.225
10	0 57 51.45	1.8337	11 26 57.7	12.184
11	0 59 41.56	1.8366	11 39 7.5	12.143
12	1 1 31.84	1.8396	11 51 14.8	12.101
13	1 3 22.31	1.8428	12 3 19.6	12.058
14	1 5 12.98	1.8461	12 15 21.8	12.015
15	1 7 3.84	1.8493	12 27 21.4	11.971
16	1 8 54.90	1.8527	12 39 18.3	11.926
17	1 10 46.16	1.8560	12 51 12.5	11.880
18	1 12 37.62	1.8594	13 3 3.9	11.833
19	1 14 29.29	1.8629	13 14 52.5	11.787
20	1 16 21.17	1.8665	13 26 38.3	11.739
21	1 18 13.27	1.8702	13 38 21.2	11.690
22	1 20 5.59	1.8738	13 50 1.1	11.640
23	1 21 58.13	1.8775	14 1 38.0	11.589
24	1 23 50.89	1.8812	N. 14 13 11.8	11.538

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 5.					**SATURDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 23 50.89	1.8812	N.14 13 11.8	11.538	0	2 59 22.06	2.1113	N.22 11 0.1	8.003
1	1 25 43.88	1.8851	14 24 42.5	11.486	1	3 1 28.90	2.1167	22 18 57.4	7.906
2	1 27 37.10	1.8890	14 36 10.1	11.433	2	3 3 36.06	2.1220	22 26 48.8	7.808
3	1 29 30.56	1.8930	14 47 34.5	11.379	3	3 5 43.54	2.1274	22 34 34.3	7.708
4	1 31 24.26	1.8970	14 58 55.6	11.324	4	3 7 51.35	2.1327	22 42 13.8	7.607
5	1 33 18.20	1.9010	15 10 13.4	11.269	5	3 9 59.47	2.1380	22 49 47.1	7.504
6	1 35 12.38	1.9051	15 21 27.9	11.213	6	3 12 7.91	2.1433	22 57 14.3	7.401
7	1 37 6.81	1.9093	15 32 39.0	11.156	7	3 14 16.67	2.1487	23 4 35.3	7.298
8	1 39 1.49	1.9135	15 43 46.6	11.097	8	3 16 25.75	2.1539	23 11 50.0	7.193
9	1 40 56.43	1.9177	15 54 50.7	11.038	9	3 18 35.14	2.1592	23 18 58.4	7.087
10	1 42 51.62	1.9220	16 5 51.2	10.978	10	3 20 44.85	2.1645	23 26 0.4	6.979
11	1 44 47.07	1.9263	16 16 48.1	10.918	11	3 22 54.88	2.1697	23 32 55.9	6.871
12	1 46 42.78	1.9307	16 27 41.4	10.857	12	3 25 5.22	2.1749	23 39 45.0	6.763
13	1 48 38.75	1.9351	16 38 31.0	10.794	13	3 27 15.87	2.1801	23 46 27.5	6.653
14	1 50 34.99	1.9397	16 49 16.7	10.730	14	3 29 26.83	2.1853	23 53 3.3	6.541
15	1 52 31.51	1.9442	16 59 58.6	10.666	15	3 31 38.11	2.1906	23 59 32.4	6.428
16	1 54 28.30	1.9487	17 10 36.6	10.601	16	3 33 49.70	2.1957	24 5 54.7	6.316
17	1 56 25.36	1.9533	17 21 10.7	10.535	17	3 36 1.59	2.2007	24 12 10.3	6.202
18	1 58 22.70	1.9580	17 31 40.8	10.468	18	3 38 13.78	2.2057	24 18 19.0	6.087
19	2 0 20.32	1.9627	17 42 6.8	10.400	19	3 40 26.28	2.2108	24 24 20.7	5.970
20	2 2 18.22	1.9674	17 52 28.8	10.332	20	3 42 39.08	2.2158	24 30 15.4	5.853
21	2 4 16.41	1.9722	18 2 46.6	10.262	21	3 44 52.18	2.2207	24 36 3.1	5.736
22	2 6 14.89	1.9771	18 13 0.2	10.191	22	3 47 5.57	2.2257	24 41 43.7	5.617
23	2 8 13.66	1.9819	N.18 23 9.5	10.118	23	3 49 19.26	2.2306	N.24 47 17.1	5.497
	FRIDAY 6.					**SUNDAY 8.**			
0	2 10 12.72	1.9868	N.18 33 14.4	10.045	0	3 51 33.24	2.2354	N.24 52 43.3	5.376
1	2 12 12.07	1.9917	18 43 14.9	9.972	1	3 53 47.51	2.2402	24 58 2.2	5.254
2	2 14 11.72	1.9967	18 53 11.0	9.898	2	3 56 2.06	2.2449	25 3 13.8	5.131
3	2 16 11.67	2.0017	19 3 2.7	9.823	3	3 58 16.90	2.2496	25 8 17.9	5.007
4	2 18 11.92	2.0067	19 12 49.8	9.746	4	4 0 32.02	2.2542	25 13 14.6	4.882
5	2 20 12.47	2.0117	19 22 32.2	9.668	5	4 2 47.41	2.2588	25 18 3.8	4.757
6	2 22 13.32	2.0167	19 32 9.9	9.589	6	4 5 3.08	2.2634	25 22 45.4	4.630
7	2 24 14.48	2.0218	19 41 42.9	9.510	7	4 7 19.02	2.2678	25 27 19.4	4.502
8	2 26 15.94	2.0269	19 51 11.1	9.429	8	4 9 35.22	2.2723	25 31 45.7	4.375
9	2 28 17.71	2.0321	20 0 34.4	9.347	9	4 11 51.69	2.2767	25 36 4.4	4.247
10	2 30 19.79	2.0373	20 9 52.8	9.265	10	4 14 8.42	2.2809	25 40 15.3	4.116
11	2 32 22.18	2.0425	20 19 6.2	9.182	11	4 16 25.40	2.2851	25 44 18.3	3.985
12	2 34 24.89	2.0477	20 28 14.6	9.097	12	4 18 42.63	2.2892	25 48 13.5	3.853
13	2 36 27.91	2.0529	20 37 17.9	9.012	13	4 21 0.11	2.2933	25 52 0.7	3.721
14	2 38 31.24	2.0582	20 46 16.1	8.926	14	4 23 17.83	2.2974	25 55 40.0	3.588
15	2 40 34.89	2.0635	20 55 9.0	8.838	15	4 25 35.80	2.3014	25 59 11.3	3.454
16	2 42 38.86	2.0687	21 3 56.6	8.749	16	4 27 54.00	2.3052	26 2 34.5	3.319
17	2 44 43.14	2.0740	21 12 38.9	8.660	17	4 30 12.43	2.3090	26 5 49.6	3.184
18	2 46 47.74	2.0793	21 21 15.8	8.569	18	4 32 31.08	2.3127	26 8 56.6	3.048
19	2 48 52.66	2.0847	21 29 47.2	8.477	19	4 34 49.95	2.3163	26 11 55.4	2.911
20	2 50 57.90	2.0900	21 38 13.1	8.385	20	4 37 9.04	2.3200	26 14 45.9	2.773
21	2 53 3.46	2.0953	21 46 33.4	8.292	21	4 39 28.35	2.3235	26 17 28.1	2.634
22	2 55 9.34	2.1007	21 54 48.1	8.197	22	4 41 47.86	2.3268	26 20 2.0	2.495
23	2 57 15.54	2.1060	22 2 57.0	8.100	23	4 44 7.57	2.3301	26 22 27.5	2.355
24	2 59 22.06	2.1113	N.22 11 0.1	8.003	24	4 46 27.47	2.3333	N.26 24 44.6	2.214

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 46 27.47	2.3333	N.26 24 44.6	2.214
1	4 48 47.56	2.3364	26 26 53.2	2.073
2	4 51 7.84	2.3396	26 28 53.4	1.932
3	4 53 28.31	2.3426	26 30 45.1	1.790
4	4 55 48.95	2,3454	26 32 28.2	1.647
5	4 58 9.75	2.3481	26 34 2.7	1.504
6	5 0 30.72	2.3508	26 35 28.7	1.361
7	5 2 51.85	2.3533	26 36 46.0	1.216
8	5 5 13.12	2.3558	26 37 54.6	1.071
9	5 7 34.54	2.3582	26 38 54.5	0.925
10	5 9 56.10	2.3605	26 39 45.6	0.779
11	5 12 17.80	2.3627	26 40 28.0	0.633
12	5 14 39.63	2.3648	26 41 1.6	0.487
13	5 17 1.58	2.3668	26 41 26.4	0.339
14	5 19 23.64	2.3687	26 41 42.3	0.192
15	5 21 45.82	2.3705	26 41 49.4	+0.044
16	5 24 8.10	2.3721	26 41 47.6	−0.104
17	5 26 30.47	2.3736	26 41 36.9	0.251
18	5 28 52.93	2.3751	26 41 17.4	0.399
19	5 31 15.48	2.3764	26 40 49.0	0.548
20	5 33 38.10	2.3777	26 40 11.6	0.699
21	5 36 0.80	2.3789	26 39 25.1	0.849
22	5 38 23.57	2.3799	26 38 29.7	0.998
23	5 40 46.39	2.3808	N.26 37 25.3	1.148

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 43 9.27	2.3817	N.26 36 12.0	1.298
1	5 45 32.20	2.3824	26 34 49.6	1.448
2	5 47 55.16	2.3830	26 33 18.3	1.597
3	5 50 18.16	2.3835	26 31 38.0	1.747
4	5 52 41.18	2.3839	26 29 48.7	1.897
5	5 55 4.23	2.3842	26 27 50.3	2.048
6	5 57 27.29	2.3844	26 25 42.9	2.198
7	5 59 50.36	2.3845	26 23 26.5	2.348
8	6 2 13.43	2.3845	26 21 1.1	2.498
9	6 4 36.50	2.3844	26 18 26.7	2.648
10	6 6 59.56	2.3842	26 15 43.3	2.798
11	6 9 22.61	2.3839	26 12 50.9	2.948
12	6 11 45.63	2.3834	26 9 49.5	3.098
13	6 14 8.62	2.3829	26 6 39.1	3.247
14	6 16 31.58	2,3823	26 3 19.8	3.397
15	6 18 54.50	2.3816	25 59 51.5	3.546
16	6 21 17.37	2.3807	25 56 14.3	3.694
17	6 23 40.19	2.3798	25 52 28.2	3.843
18	6 26 2.95	2.3788	25 48 33.1	3.992
19	6 28 25.64	2.3777	25 44 29.1	4.140
20	6 30 48.27	2.3765	25 40 16.3	4.287
21	6 33 10.82	2.3752	25 35 54.7	4.434
22	6 35 33.29	2.3738	25 31 24.2	4.582
23	6 37 55.68	2.3723	25 26 44.9	4.728
24	6 40 17.97	2.3707	N.25 21 56.8	4.874

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 40 17.97	2.3707	N.25 21 56.8	4.874
1	6 42 40.17	2.3691	25 17 0.0	5.020
2	6 45 2.26	2.3674	25 11 54.4	5.166
3	6 47 24.25	2.3656	25 6 40.1	5.311
4	6 49 46.13	2.3637	25 1 17.1	5.455
5	6 52 7.89	2.3616	24 55 45.5	5.598
6	6 54 29.52	2.3595	24 50 5.3	5.742
7	6 56 51.03	2.3574	24 44 16.5	5.884
8	6 59 12.41	2.3552	24 38 19.2	6.027
9	7 1 33.65	2.3529	24 32 13.3	6.169
10	7 3 54.76	2.3506	24 25 58.9	6.309
11	7 6 15.72	2.3481	24 19 36.2	6.448
12	7 8 36.53	2.3456	24 13 5.1	6.588
13	7 10 57.19	2.3430	24 6 25.6	6.727
14	7 13 17.69	2.3404	23 59 37.8	6.866
15	7 15 38.04	2.3377	23 52 41.7	7.003
16	7 17 58.22	2.3349	23 45 37.4	7.140
17	7 20 18.23	2.3321	23 38 24.9	7.277
18	7 22 38.07	2.3292	23 31 4.2	7.412
19	7 24 57.74	2.3263	23 23 35.4	7.547
20	7 27 17.23	2.3233	23 15 58.6	7.680
21	7 29 36.54	2.3203	23 8 13.8	7.812
22	7 31 55.67	2.3172	23 0 21.1	7.945
23	7 34 14.61	2.3141	N.22 52 20.4	8.077

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 36 33.36	2.3109	N.22 44 11.9	8.207
1	7 38 51.92	2.3077	22 35 55.6	8.337
2	7 41 10.29	2.3045	22 27 31.5	8.465
3	7 43 28.46	2.3012	22 18 59.8	8.593
4	7 45 46.43	2.2978	22 10 20.4	8.720
5	7 48 4.20	2.2945	22 1 33.4	8.846
6	7 50 21.77	2.2911	21 52 38.9	8.970
7	7 52 39.13	2.2877	21 43 37.0	9.094
8	7 54 56.29	2.2842	21 34 27.6	9.218
9	7 57 13.24	2.2807	21 25 10.8	9.341
10	7 59 29.98	2.2772	21 15 46.7	9.462
11	8 1 46.51	2.2737	21 6 15.4	9.582
12	8 4 2.83	2.2702	20 56 36.9	9.701
13	8 6 18.94	2.2667	20 46 51.3	9.819
14	8 8 34.83	2.2631	20 36 58.6	9.937
15	8 10 50.51	2.2596	20 26 58.9	10.053
16	8 13 5.98	2.2560	20 16 52.3	10.168
17	8 15 21.23	2.2523	20 6 38.8	10.282
18	8 17 36.26	2.2487	19 56 18.5	10.394
19	8 19 51.08	2.2452	19 45 51.5	10.506
20	8 22 5.68	2.2415	19 35 17.7	10.618
21	8 24 20.06	2.2379	19 24 37.3	10.728
22	8 26 34.23	2.2343	19 13 50.4	10.836
23	8 28 48.18	2.2307	19 2 57.0	10.944
24	8 31 1.92	2.2272	N.18 51 57.1	11.051

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 31 1.92	2.2272	N.18 51 57.1	11.051
1	8 33 15.44	2.2236	18 40 50.9	11.156
2	8 35 28.75	2.2200	18 29 38.4	11.261
3	8 37 41.84	2.2164	18 18 19.6	11.364
4	8 39 54.72	2.2128	18 6 54.7	11.466
5	8 42 7.38	2.2092	17 55 23.7	11.567
6	8 44 19.83	2.2057	17 43 46.7	11.667
7	8 46 32.07	2.2022	17 32 3.7	11.766
8	8 48 44.10	2.1988	17 20 14.8	11.863
9	8 50 55.93	2.1954	17 8 20.1	11.959
10	8 53 7.55	2.1919	16 56 19.7	12.055
11	8 55 18.96	2.1884	16 44 13.5	12.150
12	8 57 30.16	2.1850	16 32 1.7	12.242
13	8 59 41.16	2.1817	16 19 44.4	12.334
14	9 1 51.96	2.1783	16 7 21.6	12.425
15	9 4 2.56	2.1751	15 54 53.4	12.514
16	9 6 12.97	2.1718	15 42 19.9	12.602
17	9 8 23.18	2.1686	15 29 41.1	12.690
18	9 10 33.20	2.1654	15 16 57.1	12.776
19	9 12 43.03	2.1622	15 4 8.0	12.861
20	9 14 52.67	2.1591	14 51 13.8	12.945
21	9 17 2.12	2.1560	14 38 14.6	13.027
22	9 19 11.39	2.1530	14 25 10.5	13.108
23	9 21 20.48	2.1499	N.14 12 1.6	13.188

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 23 29.38	2.1469	N.13 58 47.9	13.267
1	9 25 38.11	2.1441	13 45 29.5	13.345
2	9 27 46.67	2.1412	13 32 6.5	13.422
3	9 29 55.06	2.1384	13 18 38.9	13.498
4	9 32 3.28	2.1357	13 5 6.8	13.572
5	9 34 11.34	2.1330	12 51 30.3	13.644
6	9 36 19.24	2.1303	12 37 49.5	13.716
7	9 38 26.98	2.1277	12 24 4.4	13.787
8	9 40 34.57	2.1252	12 10 15.1	13.856
9	9 42 42.00	2.1227	11 56 21.7	13.924
10	9 44 49.29	2.1202	11 42 24.2	13.992
11	9 46 56.43	2.1178	11 28 22.7	14.057
12	9 49 3.43	2.1155	11 14 17.4	14.121
13	9 51 10.29	2.1133	11 0 8.2	14.185
14	9 53 17.02	2.1111	10 45 55.2	14.247
15	9 55 23.62	2.1090	10 31 38.6	14.307
16	9 57 30.10	2.1069	10 17 18.4	14.367
17	9 59 36.45	2.1048	10 2 54.6	14.427
18	10 1 42.68	2.1028	9 48 27.2	14.484
19	10 3 48.79	2.1010	9 33 56.5	14.539
20	10 5 54.80	2.0992	9 19 22.5	14.594
21	10 8 0.70	2.0975	9 4 45.2	14.647
22	10 10 6.50	2.0958	8 50 4.8	14.699
23	10 12 12.20	2.0942	8 35 21.3	14.751
24	10 14 17.80	2.0926	N. 8 20 34.7	14.801

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 14 17.80	2.0926	N. 8 20 34.7	14.801
1	10 16 23.31	2.0912	8 5 45.2	14.849
2	10 18 28.74	2.0897	7 50 52.8	14.897
3	10 20 34.08	2.0883	7 35 57.6	14.943
4	10 22 39.34	2.0871	7 20 59.6	14.988
5	10 24 44.53	2.0860	7 5 59.0	15.032
6	10 26 49.66	2.0849	6 50 55.8	15.074
7	10 28 54.72	2.0838	6 35 50.1	15.116
8	10 30 59.72	2.0828	6 20 41.9	15.156
9	10 33 4.66	2.0819	6 5 31.4	15.194
10	10 35 9.55	2.0812	5 50 18.6	15.232
11	10 37 14.40	2.0804	5 35 3.6	15.268
12	10 39 19.20	2.0797	5 19 46.4	15.303
13	10 41 23.97	2.0792	5 4 27.2	15.337
14	10 43 28.71	2.0787	4 49 6.0	15.370
15	10 45 33.41	2.0782	4 33 42.8	15.402
16	10 47 38.09	2.0779	4 18 17.8	15.431
17	10 49 42 76	2.0777	4 2 51.1	15.459
18	10 51 47.41	2.0774	3 47 22.7	15.487
19	10 53 52.05	2.0773	3 31 52.7	15.513
20	10 55 56.69	2.0773	3 16 21.1	15.538
21	10 58 1.33	2.0774	3 0 48.1	15.562
22	11 0 5.98	2.0776	2 45 13.7	15.584
23	11 2 10.64	2.0778	N. 2 29 38.0	15.606

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 4 15.31	2.0780	N. 2 14 1.0	15.626
1	11 6 20.00	2.0784	1 58 22.9	15.644
2	11 8 24.72	2.0789	1 42 43.7	15.662
3	11 10 29.47	2.0795	1 27 3.5	15.678
4	11 12 34.26	2.0802	1 11 22.4	15.692
5	11 14 39.09	2.0809	0 55 40.5	15.705
6	11 16 43.96	2.0817	0 39 57.8	15.717
7	11 18 48.89	2.0826	0 24 14.4	15.728
8	11 20 53.87	2.0835	N. 0 8 30.4	15.738
9	11 22 58.91	2.0846	S. 0 7 14.1	15.746
10	11 25 4.02	2.0858	0 22 59.1	15.753
11	11 27 9.20	2.0870	0 38 44.5	15.758
12	11 29 14.46	2.0883	0 54 30.1	15.762
13	11 31 19.80	2.0897	1 10 15.9	15.765
14	11 33 25.23	2.0912	1 26 1.9	15.767
15	11 35 30.74	2.0927	1 41 48.0	15.767
16	11 37 36.35	2.0944	1 57 34.0	15.765
17	11 39 42.07	2.0962	2 13 19.8	15.763
18	11 41 47.90	2.0981	2 29 5.5	15.759
19	11 43 53.84	2.0999	2 44 50.9	15.753
20	11 45 59.89	2.1018	3 0 35.9	15.747
21	11 48 6.06	2.1039	3 16 20.5	15.738
22	11 50 12.36	2.1062	3 32 4.5	15.728
23	11 52 18.80	2.1085	3 47 47.9	15.717
24	11 54 25.38	2.1108	S. 4 3 30.6	15.705

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 54 25.38	2.1108	S. 4 3 30.6	15.705
1	11 56 32.10	2.1132	4 19 12.5	15.692
2	11 58 38.97	2.1157	4 34 53.6	15.677
3	12 0 45.99	2.1183	4 50 33.7	15.660
4	12 2 53.17	2.1210	5 6 12.8	15.642
5	12 5 0.51	2.1238	5 21 50.7	15.622
6	12 7 8.02	2.1267	5 37 27.4	15.601
7	12 9 15.71	2.1296	5 53 2.8	15.578
8	12 11 23.57	2.1325	6 8 36.8	15.555
9	12 13 31.61	2.1356	6 24 9.4	15.530
10	12 15 39.84	2.1388	6 39 40.4	15.503
11	12 17 48.27	2.1422	6 55 9.8	15.475
12	12 19 56.90	2.1455	7 10 37.4	15.445
13	12 22 5.73	2.1489	7 26 3.2	15.414
14	12 24 14.77	2.1524	7 41 27.1	15.381
15	12 26 24.02	2.1560	7 56 48.9	15.346
16	12 28 33.49	2.1597	8 12 8.6	15.310
17	12 30 43.18	2.1634	8 27 26.1	15.273
18	12 32 53.10	2.1672	8 42 41.4	15.235
19	12 35 3.25	2.1712	8 57 54.3	15.194
20	12 37 13.64	2.1752	9 13 4.7	15.152
21	12 39 24.27	2.1792	9 28 12.6	15.109
22	12 41 35.14	2.1833	9 43 17.8	15.063
23	12 43 46.27	2.1876	S. 9 58 20.2	15.017

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 45 57.65	2.1918	S. 10 13 19.8	14.968
1	12 48 9.29	2.1962	10 28 16.4	14.918
2	12 50 21.19	2.2006	10 43 10.0	14.867
3	12 52 33.36	2.2052	10 58 0.5	14.815
4	12 54 45.81	2.2097	11 12 47.8	14.760
5	12 56 58.53	2.2143	11 27 31.7	14.703
6	12 59 11.53	2.2191	11 42 12.2	14.646
7	13 1 24.82	2.2239	11 56 49.2	14.587
8	13 3 38.40	2.2287	12 11 22.6	14.525
9	13 5 52.26	2.2335	12 25 52.2	14.462
10	13 8 6.42	2.2385	12 40 18.0	14.398
11	13 10 20.88	2.2436	12 54 39.9	14.332
12	13 12 35.65	2.2487	13 8 57.8	14.264
13	13 14 50.72	2.2539	13 23 11.6	14.195
14	13 17 6.11	2.2591	13 37 21.2	14.123
15	13 19 21.81	2.2643	13 51 26.4	14.050
16	13 21 37.83	2.2697	14 5 27.2	13.976
17	13 23 54.17	2.2750	14 19 23.5	13.900
18	13 26 10.83	2.2804	14 33 15.2	13.822
19	13 28 27.82	2.2859	14 47 2.2	13.742
20	13 30 45.14	2.2914	15 0 44.3	13.661
21	13 33 2.79	2.2970	15 14 21.5	13.578
22	13 35 20.78	2.3027	15 27 53.6	13.493
23	13 37 39.11	2.3083	15 41 20.6	13.407
24	13 39 57.78	2.3141	S. 15 54 42.4	13.318

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 39 57.78	2.3141	S. 15 54 42.4	13.318
1	13 42 16.80	2.3198	16 7 58.8	13.228
2	13 44 36.16	2.3255	16 21 9.8	13.137
3	13 46 55.86	2.3313	16 34 15.3	13.044
4	13 49 15.91	2.3372	16 47 15.1	12.948
5	13 51 36.32	2.3431	17 0 9.1	12.852
6	13 53 57.08	2.3490	17 12 57.3	12.753
7	13 56 18.20	2.3549	17 25 39.5	12.653
8	13 58 39.67	2.3608	17 38 15.7	12.551
9	14 1 1.50	2.3668	17 50 45.6	12.446
10	14 3 23.69	2.3728	18 3 9.2	12.341
11	14 5 46.24	2.3788	18 15 26.5	12.234
12	14 8 9.15	2.3848	18 27 37.3	12.125
13	14 10 32.42	2.3908	18 39 41.5	12.014
14	14 12 56.05	2.3969	18 51 39.0	11.902
15	14 15 20.05	2.4030	19 3 29.7	11.788
16	14 17 44.41	2.4090	19 15 13.5	11.672
17	14 20 9.13	2.4151	19 26 50.3	11.553
18	14 22 34.22	2.4212	19 38 19.9	11.433
19	14 24 59.67	2.4272	19 49 42.3	11.313
20	14 27 25.48	2.4332	20 0 57.4	11.191
21	14 29 51.65	2.4392	20 12 5.2	11.067
22	14 32 18.18	2.4452	20 23 5.4	10.940
23	14 34 45.07	2.4512	S. 20 33 58.0	10.812

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 37 12.32	2.4572	S. 20 44 42.8	10.682
1	14 39 39.93	2.4631	20 55 19.8	10.551
2	14 42 7.89	2.4689	21 5 48.9	10.418
3	14 44 36.20	2.4748	21 16 10.0	10.284
4	14 47 4.87	2.4807	21 26 23.0	10.147
5	14 49 33.89	2.4865	21 36 27.7	10.009
6	14 52 3.25	2.4923	21 46 24.1	9.870
7	14 54 32.96	2.4980	21 56 12.1	9.729
8	14 57 3.01	2.5036	22 5 51.6	9.588
9	14 59 33.39	2.5092	22 15 22.6	9.444
10	15 2 4.11	2.5147	22 24 44.9	9.297
11	15 4 35.16	2.5203	22 33 58.3	9.149
12	15 7 6.55	2.5258	22 43 2.8	9.001
13	15 9 38.26	2.5311	22 51 58.4	8.851
14	15 12 10.28	2.5363	23 0 44.9	8.699
15	15 14 42.62	2.5416	23 9 22.3	8.547
16	15 17 15.27	2.5468	23 17 50.5	8.392
17	15 19 48.23	2.5518	23 26 9.4	8.236
18	15 22 21.49	2.5568	23 34 18.8	8.078
19	15 24 55.05	2.5617	23 42 18.8	7.920
20	15 27 28.90	2.5665	23 50 9.2	7.759
21	15 30 3.03	2.5712	23 57 49.9	7.598
22	15 32 37.44	2.5758	24 5 20.9	7.436
23	15 35 12.13	2.5803	24 12 42.2	7.272
24	15 37 47.08	2.5847	S. 24 19 53.6	7.107

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 37 47.08	2.5847	S.24 19 53.6	7.107
1	15 40 22.29	2.5890	24 26 55.0	6.940
2	15 42 57.76	2.5932	24 33 46.4	6.773
3	15 45 33.48	2.5973	24 40 27.8	6.605
4	15 48 9.44	2.6013	24 46 59.0	6.435
5	15 50 45.64	2.6052	24 53 20.0	6.264
6	15 53 22.06	2.6088	24 59 30.7	6.092
7	15 55 58.70	2.6124	25 5 31.0	5.919
8	15 58 35.55	2.6159	25 11 21.0	5.746
9	16 1 12.61	2.6192	25 17 0.5	5.571
10	16 3 49.86	2.6224	25 22 29.5	5.395
11	16 6 27.30	2.6255	25 27 47.9	5.218
12	16 9 4.92	2.6284	25 32 55.7	5.041
13	16 11 42.71	2.6312	25 37 52.8	4.863
14	16 14 20.66	2.6338	25 42 39.2	4.684
15	16 16 58.76	2.6362	25 47 14.9	4.505
16	16 19 37.00	2.6385	25 51 39.8	4.324
17	16 22 15.38	2.6407	25 55 53.8	4.142
18	16 24 53.89	2.6427	25 59 56.9	3.961
19	16 27 32.51	2.6446	26 3 49.1	3.779
20	16 30 11.24	2.6463	26 7 30.4	3.597
21	16 32 50.07	2.6478	26 11 0.7	3.413
22	16 35 28.98	2.6492	26 14 20.0	3.229
23	16 38 7.97	2.6504	S.26 17 28.2	3.045

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 40 47.03	2.6515	S.26 20 25.4	2.861
1	16 43 26.15	2.6523	26 23 11.5	2.676
2	16 46 5.31	2.6530	26 25 46.5	2.492
3	16 48 44.51	2.6536	26 28 10.5	2.307
4	16 51 23.74	2.6539	26 30 23.4	2.122
5	16 54 2.98	2.6541	26 32 25.1	1.935
6	16 56 42.23	2.6541	26 34 15.6	1.749
7	16 59 21.47	2.6539	26 35 55.0	1.564
8	17 2 0.70	2.6537	26 37 23.3	1.379
9	17 4 39.91	2.6533	26 38 40.5	1.194
10	17 7 19.08	2.6525	26 39 46.6	1.008
11	17 9 58.21	2.6517	26 40 41.5	0.822
12	17 12 37.28	2.6506	26 41 25.2	0.636
13	17 15 16.28	2.6494	26 41 57.8	0.452
14	17 17 55.21	2.6481	26 42 19.4	0.267
15	17 20 34.05	2.6465	26 42 29.9	−0.082
16	17 23 12.79	2.6448	26 42 29.3	+0.102
17	17 25 51.43	2.6430	26 42 17.7	0.286
18	17 28 29.95	2.6409	26 41 55.0	0.470
19	17 31 8.34	2.6387	26 41 21.3	0.652
20	17 33 46.59	2.6363	26 40 36.7	0.834
21	17 36 24.70	2.6338	26 39 41.2	1.016
22	17 39 2.65	2.6311	26 38 34.8	1.197
23	17 41 40.43	2.6282	26 37 17.5	1.378
24	17 44 18.03	2.6252	S.26 35 49.4	1.558

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 44 18.03	2.6252	S.26 35 49.4	1.558
1	17 46 55.45	2.6220	26 34 10.5	1.737
2	17 49 32.67	2.6186	26 32 20.9	1.916
3	17 52 9.68	2.6150	26 30 20.6	2.094
4	17 54 46.47	2.6113	26 28 9.6	2.271
5	17 57 23.04	2.6076	26 25 48.1	2.447
6	17 59 59.38	2.6037	26 23 16.0	2.622
7	18 2 35.48	2.5995	26 20 33.4	2.797
8	18 5 11.32	2.5952	26 17 40.4	2.970
9	18 7 46.90	2.5908	26 14 37.0	3.142
10	18 10 22.24	2.5862	26 11 23.3	3.313
11	18 12 57.24	2.5815	26 7 59.4	3.484
12	18 15 31.99	2.5767	26 4 25.2	3.654
13	18 18 6.44	2.5717	26 0 40.9	3.822
14	18 20 40.59	2.5667	25 56 46.6	3.988
15	18 23 14.44	2.5615	25 52 42.3	4.154
16	18 25 47.97	2.5561	25 48 28.1	4.319
17	18 28 21.17	2.5507	25 44 4.0	4.482
18	18 30 54.05	2.5452	25 39 30.2	4.644
19	18 33 26.59	2.5394	25 34 46.7	4.805
20	18 35 58.78	2.5336	25 29 53.6	4.965
21	18 38 30.62	2.5277	25 24 50.9	5.123
22	18 41 2.10	2.5217	25 19 38.8	5.280
23	18 43 33.22	2.5156	S.25 14 17.3	5.436

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 46 3.97	2.5094	S.25 8 46.5	5.590
1	18 48 34.35	2.5031	25 3 6.5	5.742
2	18 51 4.34	2.4967	24 57 17.4	5.893
3	18 53 33.95	2.4902	24 51 19.3	6.043
4	18 56 3.17	2.4837	24 45 12.2	6.192
5	18 58 31.99	2.4770	24 38 56.3	6.338
6	19 1 0.41	2.4703	24 32 31.6	6.484
7	19 3 28.43	2.4635	24 25 58.2	6.628
8	19 5 56.03	2.4566	24 19 16.2	6.770
9	19 8 23.22	2.4497	24 12 25.8	6.910
10	19 10 50.00	2.4427	24 5 27.0	7.050
11	19 13 16.35	2.4357	23 58 19.8	7.188
12	19 15 42.28	2.4286	23 51 4.4	7.324
13	19 18 7.78	2.4214	23 43 40.9	7.458
14	19 20 32.85	2.4142	23 36 9.4	7.591
15	19 22 57.49	2.4070	23 28 30.0	7.722
16	19 25 21.69	2.3997	23 20 42.8	7.852
17	19 27 45.45	2.3923	23 12 47.8	7.981
18	19 30 8.76	2.3848	23 4 45.1	8.108
19	19 32 31.63	2.3775	22 56 34.9	8.233
20	19 34 54.06	2.3701	22 48 17.2	8.356
21	19 37 16.04	2.3626	22 39 52.2	8.477
22	19 39 37.57	2.3551	22 31 19.9	8.597
23	19 41 58.65	2.3477	22 22 40.5	8.715
24	19 44 19.29	2.3401	S.22 13 54.1	8.832

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	19	44	19.29	2.3401	S. 22	13	54.1	8.832
1	19	46	39.47	2.3325	22	5	0.7	8.947
2	19	48	59.19	2.3249	21	56	0.5	9.060
3	19	51	18.46	2.3174	21	46	53.5	9.172
4	19	53	37.28	2.3098	21	37	39.8	9.282
5	19	55	55.64	2.3022	21	28	19.6	9.391
6	19	58	13.55	2.2947	21	18	52.9	9.498
7	20	0	31.00	2.2871	21	9	19.9	9.603
8	20	2	48.00	2.2796	20	59	40.6	9.707
9	20	5	4.55	2.2721	20	49	55.1	9.809
10	20	7	20.65	2.2645	20	40	3.5	9.909
11	20	9	36.29	2.2568	20	30	6.0	10.008
12	20	11	51.47	2.2492	20	20	2.6	10.106
13	20	14	6.20	2.2418	20	9	53.3	10.202
14	20	16	20.49	2.2344	19	59	38.4	10.294
15	20	18	34.33	2.2269	19	49	18.0	10.386
16	20	20	47.72	2.2195	19	38	52.1	10.477
17	20	23	0.67	2.2121	19	28	20.7	10.567
18	20	25	13.17	2.2046	19	17	44.0	10.655
19	20	27	25.22	2.1973	19	7	2.1	10.741
20	20	29	36.84	2.1900	18	56	15.1	10.826
21	20	31	48.02	2.1827	18	45	23.0	10.909
22	20	33	58.76	2.1754	18	34	26.0	10.991
23	20	36	9.07	2.1682	S. 18	23	24.1	11.071

THURSDAY 26.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	20	38	18.95	2.1611	S. 18	12	17.5	11.149
1	20	40	28.40	2.1539	18	1	6.2	11.227
2	20	42	37.42	2.1468	17	49	50.3	11.302
3	20	44	46.01	2.1397	17	38	30.0	11.375
4	20	46	54.18	2.1327	17	27	5.3	11.448
5	20	49	1.93	2.1257	17	15	36.2	11.520
6	20	51	9.27	2.1188	17	4	2.9	11.589
7	20	53	16.19	2.1119	16	52	25.5	11.657
8	20	55	22.70	2.1052	16	40	44.0	11.724
9	20	57	28.81	2.0984	16	28	58.6	11.789
10	20	59	34.51	2.0917	16	17	9.3	11.853
11	21	1	39.81	2.0851	16	5	16.2	11.917
12	21	3	44.72	2.0785	15	53	19.3	11.978
13	21	5	49.23	2.0719	15	41	18.8	12.038
14	21	7	53.35	2.0654	15	29	14.8	12.096
15	21	9	57.08	2.0590	15	17	7.3	12.153
16	21	12	0.43	2.0527	15	4	56.4	12.209
17	21	14	3.40	2.0464	14	52	42.2	12.264
18	21	16	6.00	2.0402	14	40	24.7	12.317
19	21	18	8.22	2.0340	14	28	4.1	12.369
20	21	20	10.08	2.0279	14	15	40.4	12.420
21	21	22	11.57	2.0218	14	3	13.7	12.470
22	21	24	12.70	2.0159	13	50	44.0	12.518
23	21	26	13.48	2.0101	13	38	11.5	12.565
24	21	28	13.91	2.0042	S. 13	25	36.2	12.611

FRIDAY 27.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h	m	s	s	°	′	″	″
0	21	28	13.91	2.0042	S. 13	25	36.2	12.611
1	21	30	13.99	1.9985	13	12	58.2	12.656
2	21	32	13.73	1.9927	13	0	17.5	12.699
3	21	34	13.12	1.9870	12	47	34.3	12.741
4	21	36	12.17	1.9815	12	34	48.6	12.782
5	21	38	10.90	1.9761	12	22	0.5	12.822
6	21	40	9.30	1.9707	12	9	10.0	12.861
7	21	42	7.38	1.9653	11	56	17.2	12.898
8	21	44	5.14	1.9600	11	43	22.2	12.935
9	21	46	2.58	1.9548	11	30	25.0	12.971
10	21	47	59.72	1.9497	11	17	25.7	13.004
11	21	49	56.55	1.9447	11	4	24.5	13.037
12	21	51	53.08	1.9397	10	51	21.3	13.069
13	21	53	49.32	1.9348	10	38	16.2	13.100
14	21	55	45.26	1.9299	10	25	9.3	13.130
15	21	57	40.91	1.9252	10	12	0.6	13.159
16	21	59	36.28	1.9205	9	58	50.2	13.187
17	22	1	31.37	1.9159	9	45	38.2	13.214
18	22	3	26.19	1.9114	9	32	24.5	13.241
19	22	5	20.74	1.9070	9	19	9.3	13.265
20	22	7	15.03	1.9027	9	5	52.7	13.289
21	22	9	9.06	1.8983	8	52	34.7	13.312
22	22	11	2.83	1.8941	8	39	15.3	13.333
23	22	12	56.35	1.8900	S. 8	25	54.7	13.353

SATURDAY 28.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
0	22	14	49.63	1.8860	S. 8	12	32.9	13.373
1	22	16	42.67	1.8820	7	59	9.9	13.393
2	22	18	35.47	1.8780	7	45	45.7	13.412
3	22	20	28.03	1.8742	7	32	20.5	13.429
4	22	22	20.37	1.8705	7	18	54.3	13.445
5	22	24	12.49	1.8668	7	5	27.1	13.461
6	22	26	4.39	1.8632	6	51	59.0	13.475
7	22	27	56.08	1.8597	6	38	30.1	13.488
8	22	29	47.56	1.8562	6	25	0.4	13.502
9	22	31	38.83	1.8528	6	11	29.9	13.514
10	22	33	29.90	1.8496	5	57	58.7	13.525
11	22	35	20.78	1.8464	5	44	26.9	13.535
12	22	37	11.47	1.8433	5	30	54.5	13.544
13	22	39	1.97	1.8402	5	17	21.6	13.553
14	22	40	52.29	1.8372	5	3	48.1	13.561
15	22	42	42.44	1.8344	4	50	14.2	13.568
16	22	44	32.42	1.8317	4	36	39.9	13.575
17	22	46	22.24	1.8290	4	23	5.2	13.580
18	22	48	11.90	1.8263	4	9	30.3	13.584
19	22	50	1.40	1.8237	3	55	55.1	13.588
20	22	51	50.75	1.8212	3	42	19.7	13.592
21	22	53	39.94	1.8187	3	28	44.1	13.594
22	22	55	28.99	1.8164	3	15	8.4	13.595
23	22	57	17.91	1.8142	3	1	32.7	13.596
24	22	59	6.69	1.8120	S. 2	47	56.9	13.597

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 59 6.69	1.8120	S. 2 47 56.9	13.597
1	23 0 55.35	1.8099	2 34 21.1	13.596
2	23 2 43.88	1.8078	2 20 45.4	13.594
3	23 4 32.29	1.8058	2 7 9.8	13.592
4	23 6 20.58	1.8040	1 53 34.3	13.590
5	23 8 8.77	1.8022	1 39 59.0	13.586
6	23 9 56.85	1.8005	1 26 24.0	13.582
7	23 11 44.83	1.7989	1 12 49.2	13.577
8	23 13 32.72	1.7973	0 59 14.8	13.571
9	23 15 20.51	1.7958	0 45 40.7	13.565
10	23 17 8.21	1.7944	0 32 7.0	13.558
11	23 18 55.83	1.7931	0 18 33.7	13.551
12	23 20 43.38	1.7918	S. 0 5 0.9	13.542
13	23 22 30.85	1.7907	N. 0 8 31.4	13.533
14	23 24 18.26	1.7896	0 22 3.1	13.523
15	23 26 5.60	1.7885	0 35 34.2	13.512
16	23 27 52.88	1.7876	0 49 4.6	13.502
17	23 29 40.11	1.7867	1 2 34.4	13.491
18	23 31 27.28	1.7859	1 16 3.5	13.478
19	23 33 14.41	1.7852	1 29 31.8	13.465
20	23 35 1.50	1.7845	1 42 59.3	13.452
21	23 36 48.55	1.7839	1 56 26.0	13.437
22	23 38 35.57	1.7834	2 9 51.8	13.422
23	23 40 22.56	1.7830	N. 2 23 16.7	13.407

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 42 9.53	1.7827	N. 2 36 40.6	13.390
1	23 43 56.48	1.7824	2 50 3.5	13.373
2	23 45 43.42	1.7822	3 3 25.4	13.357
3	23 47 30.34	1.7820	3 16 46.3	13.339
4	23 49 17.26	1.7820	3 30 6.1	13.320
5	23 51 4.18	1.7821	3 43 24.7	13.300
6	23 52 51.11	1.7822	3 56 42.1	13.280
7	23 54 38.04	1.7823	4 9 58.3	13.259
8	23 56 24.99	1.7826	4 23 13.2	13.238
9	23 58 11.95	1.7828	4 36 26.9	13.217
10	23 59 58.93	1.7832	4 49 39.3	13.195
11	0 1 45.94	1.7837	5 2 50.3	13.171
12	0 3 32.98	1.7842	5 15 59.8	13.147
13	0 5 20.05	1.7848	5 29 7.9	13.122
14	0 7 7.16	1.7856	5 42 14.5	13.098
15	0 8 54.32	1.7864	5 55 19.7	13.073
16	0 10 41.53	1.7872	6 8 23.3	13.047
17	0 12 28.79	1.7881	6 21 25.3	13.019
18	0 14 16.10	1.7891	6 34 25.6	12.992
19	0 16 3.48	1.7902	6 47 24.3	12.964
20	0 17 50.92	1.7913	7 0 21.3	12.935
21	0 19 38.43	1.7925	7 13 16.5	12.905
22	0 21 26.02	1.7937	7 26 9.9	12.875
23	0 23 13.68	1.7950	7 39 1.5	12.845
24	0 25 1.42	1.7964	N. 7 51 51.3	12.814

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 25 1.42	1.7964	N. 7 51 51.3	12.814
1	0 26 49.25	1.7979	8 4 39.2	12.783
2	0 28 37.17	1.7995	8 17 25.1	12.749
3	0 30 25.19	1.8012	8 30 9.1	12.717
4	0 32 13.31	1.8028	8 42 51.1	12.683
5	0 34 1.53	1.8045	8 55 31.0	12.648
6	0 35 49.85	1.8063	9 8 8.9	12.613
7	0 37 38.29	1.8082	9 20 44.6	12.578
8	0 39 26.84	1.8102	9 33 18.2	12.542
9	0 41 15.51	1.8123	9 45 49.6	12.505
10	0 43 4.31	1.8144	9 58 18.8	12.467
11	0 44 53.24	1.8165	10 10 45.6	12.428
12	0 46 42.29	1.8187	10 23 10.1	12.389
13	0 48 31.48	1.8210	10 35 32.3	12.350
14	0 50 20.81	1.8234	10 47 52.1	12.309
15	0 52 10.29	1.8259	11 0 9.4	12.267
16	0 53 59.92	1.8284	11 12 24.2	12.226
17	0 55 49.70	1.8309	11 24 36.5	12.184
18	0 57 39.63	1.8335	11 36 46.3	12.142
19	0 59 29.72	1.8363	11 48 53.5	12.098
20	1 1 19.98	1.8391	12 0 58.0	12.053
21	1 3 10.41	1.8419	12 12 59.8	12.008
22	1 5 1.01	1.8447	12 24 58.9	11.962
23	1 6 51.78	1.8477	N.12 36 55.2	11.915

WEDNESDAY, JANUARY 1, 1879.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 8 42.73	1.8507	N.12 48 48.7	11.868

PHASES OF THE MOON.

		d	h	m
☽	First Quarter, . .	1	4	37.4
○	Full Moon, . . .	9	7	49.8
☾	Last Quarter, . .	16	15	3.9
●	New Moon, . .	23	9	24.5
☽	First Quarter, . .	31	1	56.9

		d	h
☾	Apogee, ...	3	23.8
☾	Perigee, ...	19	22.6

GREENWICH MEAN TIME

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P L. of Diff.
1	Sun	W.	87° 52′ 26″	3371	89° 15′ 16″	3381	90° 37′ 54″	3391	92° 0′ 21″	3400
	α Aquilæ	W.	44 5 36	4472	45 9 53	4402	46 15 12	4341	47 21 27	4285
	Jupiter	W.	32 58 41	3043	34 28 0	3054	35 57 6	3063	37 26 1	3071
	α Arietis	E.	58 54 56	2999	57 24 42	3009	55 54 41	3019	54 24 52	3029
	Aldebaran	E.	91 16 15	3041	89 46 53	3051	88 17 43	3060	86 48 45	3069
2	Sun	W.	98 50 7	3439	100 11 39	3446	101 33 4	3452	102 54 22	3457
	α Aquilæ	W.	53 4 14	4073	54 14 42	4040	55 25 42	4010	56 37 12	3981
	Jupiter	W.	44 48 7	3108	46 16 7	3114	47 43 59	3119	49 11 45	3125
	α Arietis	E.	46 58 35	3071	45 29 50	3078	44 1 13	3085	42 32 45	3091
	Aldebaran	E.	79 26 24	3107	77 58 23	3114	76 30 30	3119	75 2 44	3125
3	Sun	W.	109 39 35	3476	111 0 26	3478	112 21 15	3480	113 42 1	3481
	α Aquilæ	W.	62 40 58	3870	63 54 48	3853	65 8 56	3836	66 23 21	3820
	Jupiter	W.	56 29 15	3142	57 56 34	3144	59 23 50	3146	60 51 4	3147
	Fomalhaut	W.	37 55 8	4200	39 3 34	4132	40 13 5	4070	41 23 36	4014
	α Arietis	E.	35 12 23	3123	33 44 41	3128	32 17 5	3134	30 49 37	3141
	Aldebaran	E.	67 45 29	3148	66 18 18	3153	64 51 12	3156	63 24 10	3158
4	Sun	W.	120 25 41	3481	121 46 26	3480	123 7 13	3479	124 28 1	3476
	α Aquilæ	W.	72 39 18	3752	73 55 10	3740	75 11 15	3729	76 27 31	3719
	Jupiter	W.	68 7 6	3146	69 34 20	3144	71 1 36	2143	72 28 54	3141
	Fomalhaut	W.	47 28 32	3798	48 43 36	3765	49 59 15	3734	51 15 26	3706
	α Pegasi	W.	25 11 55	4140	26 21 18	4033	27 32 25	3939	28 45 5	3859
	Aldebaran	E.	56 9 48	3171	54 43 4	3173	53 16 22	3174	51 49 42	3177
	Pollux	E.	98 6 49	3096	96 38 34	3095	95 10 18	3093	93 42 0	3091
5	α Aquilæ	W.	82 51 29	3673	84 8 45	3665	85 26 9	3658	86 43 41	3650
	Jupiter	W.	79 46 14	3123	81 13 56	3119	82 41 43	3114	84 9 36	3109
	Fomalhaut	W.	57 43 30	3583	59 2 23	3562	60 21 39	3543	61 41 16	3524
	α Pegasi	W.	35 6 9	3577	36 25 8	3536	37 44 52	3500	39 5 16	3467
	Saturn	W.	29 25 15	3166	30 52 5	3152	32 19 12	3139	33 46 34	3128
	Aldebaran	E.	44 37 1	3188	43 10 37	3191	41 44 17	3194	40 18 1	3198
	Pollux	E.	86 19 35	3074	84 50 53	3069	83 22 5	3064	81 53 11	3059
6	Jupiter	W.	91 30 41	3078	92 59 17	3072	94 28 1	3065	95 56 54	3058
	Fomalhaut	W.	68 24 20	3439	69 45 52	3424	71 7 41	3411	72 29 45	3397
	α Pegasi	W.	45 55 47	3332	47 19 21	3310	48 43 21	3289	50 7 45	3270
	Saturn	W.	41 6 48	3074	42 35 29	3064	44 4 22	3054	45 33 28	3044
	Aldebaran	E.	33 8 22	3237	31 42 57	3251	30 17 48	3268	28 52 59	3288
	Pollux	E.	74 27 5	3030	72 57 30	3024	71 27 47	3017	69 57 56	3010
	Regulus	E.	111 21 49	3014	109 51 53	3007	108 21 49	3000	106 51 36	2992
7	Jupiter	W.	103 23 37	3018	104 53 28	3009	106 23 29	3001	107 53 40	2993
	Fomalhaut	W.	79 23 57	3332	80 47 31	3321	82 11 18	3310	83 35 18	3299
	α Pegasi	W.	57 15 16	3181	58 41 48	3166	60 8 38	3150	61 35 47	3135
	Saturn	W.	53 1 58	2996	54 32 16	2985	56 2 47	2976	57 33 30	2966
	Pollux	E.	62 26 28	2974	60 55 43	2966	59 24 48	2959	57 53 44	2951
	Regulus	E.	99 18 8	2953	97 46 56	2944	96 15 33	2936	94 44 0	2927
8	Fomalhaut	W.	90 38 20	3251	92 3 29	3242	93 28 48	3234	94 54 17	3227
	α Pegasi	W.	68 55 52	3066	70 24 43	3054	71 53 49	3041	73 23 11	3029
	Saturn	W.	65 10 12	2916	66 42 10	2907	68 14 20	2897	69 46 43	2887

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	93° 22′ 37″	3409	94° 44′ 43″	3417	96° 6′ 40″	3425	97° 28′ 28″	3433
	α Aquilæ	W.	48 28 33	4235	49 36 26	4188	50 45 3	4146	51 54 20	4108
	Jupiter	W.	38 54 46	3079	40 23 21	3088	41 51 45	3096	43 20 0	3102
	α Arietis	E.	52 55 15	3038	51 25 49	3047	49 56 34	3055	48 27 29	3064
	Aldebaran	E.	85 19 57	3077	83 51 19	3085	82 22 51	3093	80 54 33	3101
2	Sun	W.	104 15 34	3462	105 36 41	3466	106 57 43	3470	108 18 41	3473
	α Aquilæ	W.	57 49 10	3956	59 1 33	3933	60 14 19	3911	61 27 28	3890
	Jupiter	W.	50 39 24	3129	52 6 58	3133	53 34 28	3137	55 1 53	3139
	α Arietis	E.	41 4 25	3098	39 36 13	3105	38 8 9	3110	36 40 12	3117
	Aldebaran	E.	73 35 5	3131	72 7 33	3135	70 40 6	3140	69 12 45	3144
3	Sun	W.	115 2 46	3482	116 23 30	3483	117 44 13	3482	119 4 57	3482
	α Aquilæ	W.	67 38 3	3805	68 53 0	3791	70 8 12	3777	71 23 38	3764
	Jupiter	W.	62 18 17	3148	63 45 29	3148	65 12 41	3148	66 39 53	3147
	Fomalhaut	W.	42 35 2	3963	43 47 18	3917	45 0 20	3874	46 14 6	3835
	α Arietis	E.	29 22 17	3148	27 55 5	3154	26 28 1	3162	25 1 7	3172
	Aldebaran	E.	61 57 11	3162	60 30 16	3164	59 3 24	3167	57 36 35	3168
4	Sun	W.	125 48 52	3473	127 9 46	3471	128 30 43	3467	129 51 44	3464
	α Aquilæ	W.	77 43 58	3709	79 0 36	3699	80 17 24	3690	81 34 22	3681
	Jupiter	W.	73 56 14	3138	75 23 37	3134	76 51 5	3131	78 18 37	3127
	Fomalhaut	W.	52 32 7	3678	53 49 17	3652	55 6 55	3627	56 25 0	3604
	α Pegasi	W.	29 59 6	3729	31 14 20	3726	32 30 40	3671	33 47 58	3622
	Aldebaran	E.	50 23 5	3178	48 56 30	3181	47 29 58	3183	46 3 28	3185
	Pollux	E.	92 13 39	3087	90 45 14	3084	89 16 45	3081	87 48 12	3078
5	α Aquilæ	W.	88 1 21	3644	89 19 8	3638	90 37 1	3632	91 55 1	3627
	Jupiter	W.	85 37 35	3104	87 5 40	3097	88 33 53	3091	90 2 13	3085
	Fomalhaut	W.	63 1 14	3506	64 21 32	3488	65 42 10	3471	67 3 6	3455
	α Pegasi	W.	40 26 17	3436	41 47 53	3407	43 10 1	3380	44 32 40	3356
	Saturn	W.	35 14 10	3116	36 42 0	3105	38 10 3	3095	39 38 19	3084
	Aldebaran	E.	38 51 50	3204	37 25 45	3210	35 59 48	3218	34 34 0	3226
	Pollux	E.	80 24 11	3054	78 55 5	3048	77 25 52	3043	75 56 32	3037
6	Jupiter	W.	97 25 55	3051	98 55 5	3043	100 24 25	3034	101 53 56	3026
	Fomalhaut	W.	73 52 5	3383	75 14 41	3370	76 37 32	3358	78 0 37	3345
	α Pegasi	W.	51 32 32	3251	52 57 41	3232	54 23 12	3214	55 49 4	3198
	Saturn	W.	47 2 46	3034	48 32 16	3025	50 1 58	3015	51 31 52	3006
	Aldebaran	E.	27 28 33	3312	26 4 35	3342	24 41 12	3379	23 18 32	3427
	Pollux	E.	68 27 56	3003	66 57 47	2997	65 27 30	2989	63 57 4	2981
	Regulus	E.	105 21 13	2985	103 50 41	2977	102 20 0	2969	100 49 9	2962
7	Jupiter	W.	109 24 2	2984	110 54 35	2975	112 25 19	2966	113 56 15	2957
	Fomalhaut	W.	84 59 31	3288	86 23 56	3278	87 48 33	3269	89 13 21	3259
	α Pegasi	W.	63 3 14	3121	64 30 58	3107	65 58 59	3093	67 27 17	3079
	Saturn	W.	59 4 26	2956	60 35 34	2946	62 6 54	2936	63 38 27	2927
	Pollux	E.	56 22 30	2943	54 51 6	2936	53 19 33	2928	51 47 50	2920
	Regulus	E.	93 12 16	2919	91 40 21	2910	90 8 15	2901	88 35 57	2892
8	Fomalhaut	W.	96 19 54	3220	97 45 39	3214	99 11 32	3208	100 37 32	3202
	α Pegasi	W.	74 52 48	3017	76 22 40	3005	77 52 46	2993	79 23 7	2982
	Saturn	W.	71 19 18	2877	72 52 6	2868	74 25 6	2858	75 58 19	2848

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	α Arietis	W.	25° 26′ 49″	2960	26° 57′ 52″	2943	28° 29′ 17″	2927	30° 1′ 2″	2911
	Pollux	E.	50 15 57	2913	48 43 55	2905	47 11 43	2898	45 39 22	2890
	Regulus	E.	87 3 28	2883	85 30 47	2873	83 57 54	2864	82 24 49	2855
9	α Pegasi	W.	80 53 42	2972	82 24 30	2961	83 55 32	2950	85 26 47	2941
	Saturn	W.	77 31 45	2838	79 5 23	2829	80 39 13	2819	82 13 16	2810
	α Arietis	W.	37 44 23	2845	39 17 53	2832	40 51 39	2821	42 25 40	2809
	Pollux	E.	37 55 23	2859	36 22 11	2854	34 48 53	2849	33 15 29	2845
	Regulus	E.	74 36 26	2808	73 2 9	2799	71 27 40	2790	69 52 59	2781
10	α Pegasi	W.	93 6 5	2894	94 38 32	2886	96 11 9	2877	97 43 57	2869
	Saturn	W.	90 6 34	2763	91 41 50	2754	93 17 18	2745	94 52 58	2737
	α Arietis	W.	50 19 23	2755	51 54 50	2745	53 30 30	2735	55 6 23	2725
	Aldebaran	W.	20 4 28	3293	21 28 48	3209	22 54 47	3138	24 22 10	3080
	Regulus	E.	61 56 32	2735	60 20 39	2726	58 44 34	2717	57 8 17	2708
11	α Arietis	W.	63 9 6	2678	64 46 16	2669	66 23 38	2659	68 1 13	2650
	Aldebaran	W.	31 54 11	2883	33 26 51	2856	35 0 6	2832	36 33 52	2810
	Regulus	E.	49 3 57	2666	47 26 31	2657	45 48 54	2649	44 11 6	2642
	Spica	E.	103 6 51	2664	101 29 23	2656	99 51 44	2647	98 13 53	2638
12	α Arietis	W.	76 12 4	2607	77 50 49	2599	79 29 45	2591	81 8 52	2583
	Aldebaran	W.	44 29 24	2719	46 5 39	2704	47 42 14	2690	49 19 7	2676
	Regulus	E.	35 59 30	2604	34 20 40	2597	32 41 41	2591	31 2 33	2584
	Spica	E.	90 1 47	2597	88 22 48	2589	86 43 38	2582	85 4 18	2574
13	α Arietis	W.	89 27 11	2544	91 7 23	2536	92 47 46	2529	94 28 19	2523
	Aldebaran	W.	57 27 51	2617	59 6 23	2607	60 45 9	2596	62 24 9	2586
	Spica	E.	76 44 55	2535	75 4 31	2527	73 23 56	2520	71 43 11	2512
	Sun	E.	135 59 24	2890	134 26 52	2880	132 54 8	2871	131 21 12	2862
14	Aldebaran	W.	70 42 29	2540	72 22 46	2531	74 3 16	2523	75 43 57	2515
	Pollux	W.	28 22 27	2554	30 2 25	2538	31 42 45	2525	33 23 24	2511
	Spica	E.	63 16 53	2477	61 35 7	2470	59 53 12	2463	58 11 7	2456
	Mars	E.	94 20 47	2713	92 44 24	2705	91 7 51	2698	89 31 8	2689
	Sun	E.	123 33 44	2819	121 59 41	2811	120 25 28	2802	118 51 3	2795
15	Aldebaran	W.	84 10 9	2476	85 51 56	2469	87 33 53	2462	89 16 0	2455
	Pollux	W.	41 50 57	2455	43 33 13	2445	45 15 43	2436	46 58 26	2427
	Spica	E.	49 38 16	2423	47 55 14	2416	46 12 2	2410	44 28 41	2403
	Mars	E.	81 24 59	2652	79 47 15	2646	78 9 22	2638	76 31 19	2631
	Sun	E.	110 56 22	2754	109 20 54	2747	107 45 16	2739	106 9 28	2731
16	Aldebaran	W.	97 49 0	2422	99 32 4	2416	101 15 16	2410	102 58 37	2404
	Pollux	W.	55 35 9	2385	57 19 5	2377	59 3 13	2369	60 47 32	2362
	Regulus	W.	18 33 36	2395	20 17 18	2382	22 1 18	2371	23 45 34	2360
	Spica	E.	35 49 48	2375	34 5 37	2370	32 21 19	2365	30 36 54	2361
	Mars	E.	68 18 40	2596	66 39 40	2590	65 0 31	2583	63 21 13	2577
	Sun	E.	98 7 52	2693	96 31 3	2686	94 54 4	2678	93 16 55	2671
17	Pollux	W.	69 31 43	2326	71 17 4	2320	73 2 34	2313	74 48 14	2307
	Regulus	W.	32 30 22	2318	34 15 55	2311	36 1 39	2304	37 47 33	2297
	Mars	E.	55 2 36	2548	53 22 29	2542	51 42 14	2536	50 1 51	2531

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	α Arietis	W.	31 33 7	2897	33 5 30	2883	34 38 11	2869	36 11 9	2857
	Pollux	E.	44 6 51	2883	42 34 11	2877	41 1 23	2871	39 28 27	2865
	Regulus	E.	80 51 33	2846	79 18 5	2836	77 44 24	2827	76 10 31	2818
9	α Pegasi	W.	86 58 14	2931	88 29 53	2921	90 1 45	2912	91 33 49	2902
	Saturn	W.	83 47 31	2801	85 21 58	2791	86 56 38	2782	88 31 30	2772
	α Arietis	W.	43 59 56	2798	45 34 26	2787	47 9 11	2776	48 44 10	2766
	Pollux	E.	31 42 0	2843	30 8 28	2842	28 34 54	2841	27 1 19	2842
	Regulus	E.	68 18 6	2772	66 43 1	2762	65 7 43	2753	63 32 13	2744
10	α Pegasi	W.	99 16 55	2862	100 50 2	2855	102 23 19	2848	103 56 44	2842
	Saturn	W.	96 28 49	2728	98 4 52	2719	99 41 6	2711	101 17 31	2703
	α Arietis	W.	56 42 30	2715	58 18 50	2705	59 55 23	2696	61 32 8	2687
	Aldebaran	W.	25 50 44	3030	27 20 20	2985	28 50 51	2947	30 22 10	2914
	Regulus	E.	55 31 48	2699	53 55 7	2691	52 18 15	2683	50 41 12	2674
11	α Arietis	W.	69 39 0	2641	71 16 59	2633	72 55 9	2624	74 33 31	2616
	Aldebaran	W.	38 8 7	2788	39 42 50	2769	41 17 58	2751	42 53 34	2735
	Regulus	E.	42 33 8	2634	40 54 59	2626	39 16 40	2618	37 38 10	2611
	Spica	E.	96 35 50	2630	94 57 36	2622	93 19 11	2614	91 40 35	2605
12	α Arietis	W.	82 48 10	2575	84 27 39	2567	86 7 19	2559	87 47 10	2552
	Aldebaran	W.	50 56 19	2663	52 33 48	2652	54 11 33	2640	55 49 34	2628
	Regulus	E.	29 23 16	2578	27 43 51	2572	26 4 18	2567	24 24 38	2563
	Spica	E.	83 24 47	2566	81 45 5	2558	80 5 12	2551	78 25 9	2543
13	α Arietis	W.	96 9 2	2514	97 49 56	2507	99 31 0	2500	101 12 13	2493
	Aldebaran	W.	64 3 23	2576	65 42 51	2567	67 22 31	2558	69 2 24	2549
	Spica	E.	70 2 15	2505	68 21 9	2499	66 39 54	2492	64 58 29	2484
	Sun	E.	129 48 5	2854	128 14 47	2845	126 41 17	2836	125 7 36	2828
14	Aldebaran	W	77 24 49	2507	79 5 52	2499	80 47 7	2491	82 28 33	2484
	Pollux	W.	35 4 22	2499	36 45 37	2487	38 27 8	2476	40 8 55	2465
	Spica	E.	56 28 52	2449	54 46 27	2443	53 3 53	2436	51 21 9	2429
	Mars	E.	87 54 14	2682	86 17 10	2675	84 39 56	2668	83 2 33	2660
	Sun	E.	117 16 28	2786	115 41 42	2779	114 6 46	2770	112 31 39	2763
15	Aldebaran	W.	90 58 17	2448	92 40 44	2441	94 23 20	2435	96 6 5	2428
	Pollux	W.	48 41 22	2419	50 24 30	2410	52 7 51	2401	53 51 24	2393
	Spica	E.	42 45 11	2398	41 1 33	2391	39 17 46	2386	37 33 51	2380
	Mars	E.	74 53 6	2624	73 14 44	2617	71 36 12	2610	69 57 31	2603
	Sun	E.	104 33 29	2723	102 57 20	2716	101 21 1	2708	99 44 31	2701
16	Aldebaran	W.	104 42 6	2398	106 25 43	2393	108 9 28	2388	109 53 20	2384
	Pollux	W.	62 32 1	2355	64 16 41	2348	66 1 31	2340	67 46 32	2333
	Regulus	W.	25 30 6	2350	27 14 52	2342	28 59 50	2334	30 45 0	2326
	Spica	E.	28 52 23	2357	27 7 47	2354	25 23 6	2352	23 38 22	2350
	Mars	E.	61 41 47	2571	60 2 12	2564	58 22 28	2558	56 42 36	2553
	Sun	E.	91 39 36	2663	90 2 7	2657	88 24 29	2650	86 46 42	2643
17	Pollux	W.	76 34 3	2301	78 20 1	2295	80 6 8	2289	81 52 23	2283
	Regulus	W.	39 33 37	2291	41 19 50	2284	43 6 13	2277	44 52 46	2271
	Mars	E.	48 21 21	2527	46 40 45	2522	45 0 3	2520	43 19 17	2516

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Sun	E.	83° 8′ 45″	2636	83° 30′ 39″	2629	81° 52′ 24″	2623	80° 14′ 0″	2616
18	Pollux	W.	83 38 47	2278	85 25 18	2273	87 11 57	2268	88 58 43	2264
	Regulus	W.	46 39 28	2266	48 26 18	2261	50 13 15	2256	52 0 20	2251
	Mars	E.	41 38 26	2512	39 57 30	2510	38 16 31	2508	36 35 29	2507
	Sun	E.	71 59 52	2587	70 20 39	2581	68 41 18	2576	67 1 50	2572
19	Pollux	W.	97 54 8	2244	99 41 30	2241	101 28 56	2239	103 16 25	2237
	Regulus	W.	60 57 28	2230	62 45 11	2226	64 32 59	2223	66 20 52	2220
	Sun	E.	58 42 59	2551	57 2 57	2548	55 22 50	2545	53 42 39	2543
20	Regulus	W.	75 21 7	2212	77 9 17	2212	78 57 27	2212	80 45 36	2212
	Spica	W.	21 25 29	2251	23 12 41	2243	25 0 4	2239	26 47 34	2235
	Sun	E.	45 21 6	2536	43 40 43	2537	42 0 21	2538	40 20 0	2538
21	Regulus	W.	89 46 7	2220	91 34 5	2223	93 21 59	2226	95 9 48	2230
	Spica	W.	35 45 48	2233	37 33 27	2234	39 21 4	2237	41 8 37	2239
	Sun	E.	31 58 53	2553	30 18 54	2558	28 39 1	2564	26 59 17	2571
25	Sun	W.	20 24 48	2897	21 57 11	2908	23 29 20	2920	25 1 13	2933
	α Pegasi	E.	60 10 30	2737	58 34 39	2760	56 59 19	2784	55 24 30	2809
	Saturn	E.	62 42 59	2567	61 3 19	2583	59 24 0	2599	57 45 4	2615
	α Arietis	E.	101 56 23	2532	100 15 54	2546	98 35 45	2561	96 55 57	2576
26	Sun	W.	32 36 20	3005	34 6 26	3021	35 36 13	3036	37 5 41	3052
	α Pegasi	E.	47 38 56	2950	46 7 41	2983	44 37 7	3018	43 7 17	3056
	Saturn	E.	49 36 7	2702	47 59 30	2720	46 23 17	2739	44 47 29	2757
	α Arietis	E.	88 42 4	2652	87 4 20	2668	85 26 57	2683	83 49 54	2698
27	Sun	W.	44 28 10	3130	45 55 43	3146	47 22 57	3161	48 49 53	3176
	α Pegasi	E.	35 50 37	3288	34 26 11	3346	33 2 53	3412	31 40 50	3484
	Saturn	E.	36 54 42	2856	35 21 27	2877	33 48 39	2900	32 16 20	2923
	α Arietis	E.	75 49 47	2774	74 14 45	2789	72 40 3	2804	71 5 41	2819
	Aldebaran	E.	108 2 47	2829	106 28 57	2842	104 55 24	2855	103 22 8	2869
28	Sun	W.	56 0 7	3248	57 25 19	3263	58 50 14	3276	60 14 54	3289
	Jupiter	W.	23 8 16	2953	24 39 28	2965	26 10 25	2977	27 41 6	2989
	α Arietis	E.	63 18 29	2890	61 45 57	2902	60 13 41	2916	58 41 42	2928
	Aldebaran	E.	95 40 7	2935	94 8 32	2947	92 37 13	2960	91 6 10	2972
29	Sun	W.	67 14 34	3349	68 37 49	3359	70 0 52	3369	71 23 44	3379
	Jupiter	W.	35 10 53	3045	36 40 10	3055	38 9 15	3065	39 38 8	3074
	α Arietis	E.	51 5 43	2988	49 35 15	2999	48 5 1	3010	46 35 1	3022
	Aldebaran	E.	83 34 36	3029	82 4 59	3039	80 35 34	3049	79 6 22	3059
30	Sun	W.	78 15 24	3422	79 37 16	3428	80 59 1	3434	82 20 39	3440
	Jupiter	W.	46 59 54	3113	48 27 48	3120	49 55 33	3126	51 23 11	3132
	α Arietis	E.	39 8 11	3069	37 39 24	3078	36 10 48	3087	34 42 23	3097
	Aldebaran	E.	71 43 14	3102	70 15 7	3110	68 47 10	3119	67 19 23	3126
31	Sun	W.	89 7 20	3462	90 28 27	3464	91 49 31	3466	93 10 33	3468
	Jupiter	W.	58 39 53	3152	60 7 0	3154	61 34 4	3156	63 1 6	3157
	Aldebaran	E.	60 2 27	3156	58 35 25	3161	57 8 29	3166	55 41 39	3171

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Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	**Sun**	E.	78° 35′ 27″	2610	76° 56′ 46″	2604	75° 17′ 56″	2598	73° 38′ 58″	2592
18	**Pollux**	W.	90 45 36	2260	92 32 35	2256	94 19 40	2251	96 6 51	2247
	Regulus	W.	53 47 32	2946	55 34 51	2241	57 22 17	2237	59 9 50	2233
	Mars	E.	34 54 25	2507	33 13 21	2507	31 32 18	2509	29 51 17	2512
	Sun	E.	65 22 16	2567	63 42 36	2562	62 2 49	2559	60 22 57	2554
19	**Pollux**	W.	105 3 57	2235	106 51 32	2233	108 39 10	2232	110 26 50	2232
	Regulus	W.	68 8 50	2218	69 56 51	2217	71 44 54	2215	73 32 59	2213
	Sun	E.	52 2 25	2540	50 22 8	2539	48 41 49	2538	47 1 28	2537
20	**Regulus**	W.	82 33 45	2213	84 21 53	2214	86 10 0	2215	87 58 5	2217
	Spica	W.	28 35 9	2233	30 22 47	2232	32 10 27	2231	33 58 8	2232
	Sun	E.	38 39 40	2540	36 59 22	2543	35 19 8	2545	33 38 58	2549
21	**Regulus**	W.	96 57 31	2234	98 45 8	2239	100 32 38	2244	102 20 0	2249
	Spica	W.	42 56 7	2242	44 43 32	2246	46 30 51	2251	48 18 3	2256
	Sun	E.	25 19 42	2579	23 40 18	2588	22 1 7	2599	20 22 10	2612
25	**Sun**	W.	26 32 50	2947	28 4 9	2961	29 35 11	2975	31 5 55	2990
	α Pegasi	E.	53 50 14	2835	52 16 31	2862	50 43 23	2890	49 10 51	2919
	Saturn	E.	56 6 30	2632	54 28 19	2650	52 50 32	2667	51 13 8	2684
	α Arietis	E.	95 16 29	2591	93 37 22	2606	91 58 35	2621	90 20 9	2637
26	**Sun**	W.	38 34 49	3068	40 3 38	3083	41 32 8	3099	43 0 19	3115
	α Pegasi	E.	41 38 14	3096	40 9 59	3138	38 42 35	3183	37 16 6	3234
	Saturn	E.	43 12 5	2776	41 37 6	2795	40 2 32	2815	38 28 24	2835
	α Arietis	E.	82 13 12	2713	80 36 50	2729	79 0 49	2744	77 25 8	2759
27	**Sun**	W.	50 16 31	3191	51 42 51	3205	53 8 54	3220	54 34 39	3235
	α Pegasi	E.	30 20 8	3566	29 0 57	3659	27 43 26	3764	26 27 46	3883
	Saturn	E.	30 44 30	2946	29 13 10	2972	27 42 22	3000	26 12 9	3031
	α Arietis	E.	69 31 38	2833	67 57 53	2848	66 24 27	2862	64 51 19	2876
	Aldebaran	E.	101 49 10	2883	100 16 29	2896	98 44 5	2909	97 11 58	2922
28	**Sun**	W.	61 39 18	3301	63 3 28	3313	64 27 24	3326	65 51 6	3338
	Jupiter	W.	29 11 32	3001	30 41 43	3013	32 11 40	3024	33 41 23	3034
	α Arietis	E.	57 9 59	2941	55 38 32	2954	54 7 21	2966	52 36 25	2977
	Aldebaran	E.	89 35 22	2984	88 4 49	2996	86 34 31	3007	85 4 27	3018
29	**Sun**	W.	72 46 25	3388	74 8 55	3898	75 31 14	3406	76 53 24	3415
	Jupiter	W.	41 6 49	3082	42 35 20	3091	44 3 41	3099	45 31 52	3106
	α Arietis	E.	45 5 15	3031	43 35 41	3041	42 6 19	3051	40 37 9	3060
	Aldebaran	E.	77 37 22	3068	76 8 33	3078	74 39 56	3087	73 11 30	3095
30	**Sun**	W.	83 42 10	3446	85 3 35	3450	86 24 55	3455	87 46 10	3459
	Jupiter	W.	52 50 42	3137	54 18 7	3141	55 45 27	3145	57 12 42	3148
	α Arietis	E.	33 14 10	3105	31 46 7	3114	30 18 15	3124	28 50 34	3133
	Aldebaran	E.	65 51 45	3133	64 24 15	3138	62 56 52	3144	61 29 36	3150
31	**Sun**	W.	94 31 33	3469	95 52 32	3470	97 13 30	3469	98 34 29	3469
	Jupiter	W.	64 28 6	3158	65 55 5	3159	67 22 3	3159	68 49 1	3159
	Aldebaran	E.	54 14 55	3175	52 48 16	3180	51 21 43	3184	49 55 15	3188

VENUS, 1878.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 55 3.92	+7.376	−13 8 48.1	+59.17	3 10.9
2	21 57 58.83	7.197	12 45 6.8	59.26	3 9.8
3	22 0 49.38	7.014	12 21 24.0	59.30	3 8.8
4	22 3 35.47	6.826	11 57 41.0	59.28	3 7.6
5	22 6 16.98	6.632	11 33 59.0	59.21	3 6.3
6	22 8 53.78	6.433	11 10 19.3	59.09	3 5.0
7	22 11 25.73	6.228	10 46 43.5	58.90	3 3.6
8	22 13 52.70	6.017	10 23 12.9	58.66	3 2.1
9	22 16 14.52	5.801	9 59 49.1	58.34	3 0.6
10	22 18 31.05	5.577	9 36 33.4	57.97	2 58.9
11	22 20 42.11	5.345	9 13 27.5	57.52	2 57.1
12	22 22 47.52	5.107	8 50 33.1	57.01	2 55.2
13	22 24 47.10	4.860	8 27 51.9	56.42	2 53.2
14	22 26 40.69	4.607	8 5 25.4	55.77	2 51.2
15	22 28 28.12	4.345	7 43 15.4	55.04	2 49.0
16	22 30 9.18	4.076	7 21 23.8	54.25	2 46.7
17	22 31 43.68	3.799	6 59 52.3	53.36	2 44.3
18	22 33 11.42	3.513	6 38 42.8	52.41	2 41.9
19	22 34 32.22	3.219	6 17 57.3	51.37	2 39.3
20	22 35 45.87	2.917	5 57 37.7	50.25	2 36.6
21	22 36 52.18	2.606	5 37 46.0	49.04	2 33.7
22	22 37 50.93	2.288	5 18 24.5	47.74	2 30.8
23	22 38 41.95	1.962	4 59 35.3	46.35	2 27.7
24	22 39 25.03	1.627	4 41 20.6	44.87	2 24.4
25	22 40 0.02	1.286	4 23 42.7	43.28	2 21.0
26	22 40 26.70	0.936	4 6 43.9	41.60	2 17.6
27	22 40 44.92	0.580	3 50 26.7	39.81	2 13.9
28	22 40 54.50	+0.216	3 34 53.6	37.92	2 10.2
29	22 40 55.29	−0.152	3 20 7.3	35.92	2 6.2
30	22 40 47.21	0.525	3 6 10.2	33.82	2 2.1
31	22 40 30.11	0.902	2 53 4.9	31.60	1 57.8
32	22 40 3.93	−1.282	− 2 40 53.9	+29.28	1 53.5

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st
Semidiameter	16.5″	17.7″	19.1″	20.6″	22.3″	24.2″	26.1″
Hor. Parallax	17.1	18.4	19.8	21.4	23.1	25.0	27.0

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	22 40 3.93	−1.282	−2 40 53.9	+29.28	1 53.5
2	22 39 28.64	1.661	2 29 40.1	26.84	1 48.9
3	22 38 44.21	2.042	2 19 26.0	24.30	1 44.2
4	22 37 50.65	2.421	2 10 14.2	21.66	1 39.4
5	22 36 48.06	2.795	2 2 7.0	18.92	1 34.4
6	22 35 36.55	3.162	1 55 6.7	16.08	1 29.3
7	22 34 16.33	3.520	1 49 15.2	13.17	1 24.1
8	22 32 47.67	3.866	1 44 34.5	10.20	1 18.7
9	22 31 10.90	4.197	1 41 6.0	7.16	1 13.1
10	22 29 26.37	4.511	1 38 51.0	4.08	1 7.4
11	22 27 34.57	4.803	1 37 50.0	+ 0.96	1 1.7
12	22 25 36.03	5.070	1 38 3.5	− 2.13	0 55.8
13	22 23 31.38	5.312	1 39 31.1	5.22	0 49.8
14	22 21 21.33	5.520	1 42 12.1	8.24	0 43.7
15	22 19 6.67	5.697	1 46 5.2	11.21	0 37.5
16	22 16 48.18	5.838	1 51 8.3	14.06	0 31.2
17	22 14 26.74	5.943	1 57 19.2	16.83	0 25.0
18	22 12 3.26	6.007	2 4 34.7	19.44	0 18.7
19	22 9 38.71	6.032	2 12 51.4	21.90	0 12.4
20	22 7 14.03	6.017	2 22 5.2	24.19	0 6.1 23 59.7
21	22 4 50.21	5.962	2 32 11.7	26.29	23 53.4
22	22 2 28.19	5.867	2 43 5.7	28.16	23 47.2
23	22 0 8.92	5.733	2 54 42.5	29.82	23 41.1
24	21 57 53.33	5.561	3 6 56.3	31.28	23 35.0
25	21 55 42.26	5.355	3 19 42.1	32.46	23 28.9
26	21 53 36.53	5.116	3 32 54.1	33.43	23 23.0
27	21 51 36.88	4.848	3 46 26.4	34.17	23 17.2
28	21 49 44.01	4.554	4 0 14.1	34.69	23 11.5
29	21 47 58.46	4.235	4 14 11.8	35.01	23 6.0
30	21 46 20.85	3.897	4 28 14.3	35.11	23 0.5
31	21 44 51.58	3.541	4 42 16.7	35.01	22 55.3
32	21 43 31.08	−3.170	−4 56 14.2	−34.71	22 50.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	28.0″	29.5″	30.7″	31.1″	30.7″
Hor. Parallax	28.9	30.6	31.8	32.2	31.7

NOTE.—North declinations are marked +, south declinations −.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 47 58.46	−4.235	−4 14 11.8	−35.01	23 6.0
2	21 46 20.85	3.897	4 28 14.3	35.11	23 0.5
3	21 44 51.58	3.541	4 42 16.7	35.01	22 55.3
4	21 43 31.08	3.170	4 56 14.2	34.71	22 50.1
5	21 42 19.61	2.786	5 10 2.8	34.24	22 45.3
6	21 41 17.45	2.393	5 23 38.4	34.63	22 40.6
7	21 40 24.80	1.994	5 36 57.2	32.87	22 36.0
8	21 39 41.72	1.593	5 49 55.7	31.96	22 31.3
9	21 39 8.35	1.187	6 2 30.9	30.93	22 26.9
10	21 38 44.69	0.785	6 14 39.9	29.78	22 22.7
11	21 38 30.69	−0.381	6 26 19.9	28.52	22 18.6
12	21 38 26.33	+0.018	6 37 28.7	27.18	22 14.7
13	21 38 31.47	0.412	6 48 4.3	25.76	22 10.9
14	21 38 45.99	0.799	6 58 4.9	24.28	22 7.4
15	21 39 9.77	1.179	7 7 28.9	22.72	22 4.1
16	21 39 42.56	1.552	7 16 15.2	21.12	22 0.9
17	21 40 24.19	1.916	7 24 22.4	19.46	21 57.9
18	21 41 14.41	2.270	7 31 49.5	17.78	21 55.1
19	21 42 13.02	2.613	7 38 35.8	16.06	21 52.4
20	21 43 19.75	2.946	7 44 40.8	14.32	21 49.7
21	21 44 34.36	3.268	7 50 3.9	12.58	21 47.2
22	21 45 56.58	3.580	7 54 44.9	10.82	21 44.7
23	21 47 26.14	3.880	7 58 43.4	9.03	21 42.3
24	21 49 2.79	4.170	8 1 59.3	7.27	21 39.9
25	21 50 46.21	4.447	8 4 32.7	5.49	21 37.8
26	21 52 36.16	4.714	8 6 23.6	3.73	21 35.7
27	21 54 32.36	4.968	8 7 32.2	1.98	21 33.8
28	21 56 34.55	5.213	8 7 59.1	− 0.25	21 31.9
29	21 58 42.48	5.446	8 7 44.5	+ 1.47	21 30.2
30	22 0 55.86	5.668	8 6 49.0	3.16	21 28.4
31	22 3 14.47	5.881	8 5 12.8	4.84	21 26.9
32	22 5 38.07	+6.083	−8 2 56.6	+ 6.51	21 25.4

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	29.″5	27.″9	26.″0	24.″0	22.″1	20.″4
Hor. Parallax	30.6	28.9	26.9	24.9	22.9	21.1

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	22 5 38 07	+6.083	−8 2 56.6	+ 6.51	21 25.4
2	22 8 6.40	6.274	8 0 0.5	8.15	21 24.0
3	22 10 39.29	6.461	7 56 25.2	9.78	21 22.7
4	22 13 16.46	6.637	7 52 11.4	11.37	21 21.5
5	22 15 57.75	6.803	7 47 19.7	12.95	21 20.2
6	22 18 42.94	6.963	7 41 50.3	14.50	21 19.1
7	22 21 31.88	7.114	7 35 43.9	16.03	21 18.0
8	22 24 24.36	7.258	7 29 1.3	17.53	21 17.0
9	22 27 20.24	7.396	7 21 43.0	19.00	21 16.1
10	22 30 19.34	7.527	7 13 49.4	20.46	21 15.2
11	22 33 21.53	7.652	7 5 21.3	21.88	21 14.4
12	22 36 26.63	7.772	6 56 19.0	23.30	21 13.6
13	22 39 34.53	7.886	6 46 43.1	24.68	21 12.7
14	22 42 45.11	7.994	6 36 34.5	26.04	21 12.0
15	22 45 58.24	8.098	6 25 53.6	27.37	21 11.3
16	22 49 13.78	8.197	6 14 41.1	28.67	21 10.7
17	22 52 31.64	8.291	6 2 57.5	29.95	21 10.1
18	22 55 51.71	8.381	5 50 43.8	31.20	21 9.5
19	22 59 13.90	8.467	5 38 0.4	32.42	21 9.0
20	23 2 38.10	8.549	5 24 47.9	33.62	21 8.5
21	23 6 4.23	8.627	5 11 7.1	34.77	21 8.0
22	23 9 32.17	8.702	4 56 58.8	35.91	21 7.5
23	23 13 1.87	8.772	4 42 23.7	37.00	21 7.1
24	23 16 33.21	8.840	4 27 22.6	38.08	21 6.7
25	23 20 6.14	8.905	4 11 56.1	39.12	21 6.3
26	23 23 40.58	8.966	3 56 5.1	40.12	21 5.9
27	23 27 16.47	9.025	3 39 50.4	41.09	21 5.6
28	23 30 53.73	9.080	3 23 12.6	42.04	21 5.2
29	23 34 32.32	9.134	3 6 12.6	43.95	21 5.0
30	23 38 12.15	9.185	2 48 51.2	43.83	21 4.7
31	23 41 53.21	9.234	2 31 9.1	44.68	21 4.5
32	23 45 35.41	+9.282	−2 13 7.1	+45.49	21 4.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	18.″8	17.″4	16.″2	15.″1	14.″1	13.″2
Hor. Parallax	19.5	18.1	16.8	15.6	14.6	13.7

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 41 53.21	+ 9.234	−2 31 9.1	+44.68	21 4.5
2	23 45 35.41	9.282	2 13 7.1	45.49	21 4.3
3	23 49 18.73	9.327	1 54 45.9	46.28	21 4.1
4	23 53 3.11	9.371	1 36 6.2	47.03	21 3.9
5	23 56 48.55	9.414	1 17 8.9	45.75	21 3.7
6	0 0 34.99	9.455	0 57 54.7	48.43	21 3.5
7	0 4 22.41	9.496	0 38 24.3	49.09	21 3.4
8	0 8 10.79	9.536	−0 18 38.3	49.72	21 3.3
9	0 12 0.10	9.574	+0 1 22.6	50.33	21 3.2
10	0 15 50.34	9.611	0 21 37.5	50.90	21 3.1
11	0 19 41.48	9.648	0 42 5.9	51.44	21 3.0
12	0 23 33.53	9.685	1 2 47.1	51.96	21 2.9
13	0 27 26.46	9.724	1 23 40.1	52.44	21 2.9
14	0 31 20.28	9.761	1 44 44.6	52.90	21 2.9
15	0 35 14.98	9.797	2 5 59.8	53.34	21 2.9
16	0 39 10.56	9.834	2 27 25.0	53.74	21 2.9
17	0 43 7.00	9.870	2 48 59.5	54.11	21 2.9
18	0 47 4.32	9.907	3 10 42.3	54.44	21 2.9
19	0 51 2.52	9.943	3 32 33.0	54.75	21 3.0
20	0 55 1.60	9.980	3 54 30.9	55.04	21 3.0
21	0 59 1.55	10.016	4 16 35.1	55.29	21 3.1
22	1 3 2.39	10.053	4 38 44.9	55.51	21 3.2
23	1 7 4.10	10.090	5 0 59.6	55.70	21 3.3
24	1 11 6.68	10.127	5 23 18.3	55.85	21 3.4
25	1 15 10.16	10.164	5 45 40.3	55.98	21 3.6
26	1 19 14.53	10.201	6 8 5.0	56.06	21 3.7
27	1 23 19.81	10.239	6 30 31.5	56.13	21 3.9
28	1 27 25.98	10.277	6 52 59.0	56.16	21 4.1
29	1 31 33.08	10.315	7 15 26.9	56.15	21 4.3
30	1 35 41.08	10.353	7 37 54.4	56.12	21 4.5
31	1 39 50.00	10.391	8 0 20.9	56.05	21 4.7
32	1 43 59.85	+10.430	+8 22 45.3	+55.97	21 4.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	12″.5	11″.8	11″.2	10″.6	10″.1	9″.7	9″.3
Hor. Parallax	12.9	12.2	11.6	11.0	10.5	10.0	9.6

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	1 43 59.85	+10.430	+ 8 22 45.3	+55.97	21 4.9
1	1 48 10.65	10.469	8 45 7.0	55.83	21 5.1
3	1 52 22.40	10.509	9 7 25.3	55.68	21 5.3
4	1 56 35.12	10.550	9 29 39.5	55.50	21 5.6
5	2 0 48.80	10.591	9 51 49.0	55.28	21 5.9
6	2 5 3.49	10.633	10 13 53.0	55.04	21 6.2
7	2 9 19.18	10.675	10 35 50.7	54.76	21 6.5
8	2 13 35.90	10.718	10 57 41.6	54.47	21 6.9
9	2 17 53.65	10.762	11 19 24.8	54.14	21 7.3
10	2 22 12.46	10.806	11 40 59.7	53.78	21 7.7
11	2 26 32.36	10.851	12 2 25.6	53.38	21 8.1
12	2 30 53.35	10.897	12 23 41.8	52.97	21 8.5
13	2 35 15.44	10.944	12 44 47.6	52.51	21 8.9
14	2 39 38.65	10.991	13 5 42.4	52.04	21 9.4
15	2 44 3.00	11.039	13 26 25.2	51.52	21 9.9
16	2 48 28.50	11.088	13 46 55.5	50.99	21 10.4
17	2 52 55.17	11.136	14 7 12.5	50.41	21 10.9
18	2 57 23.03	11.185	14 27 15.4	49.81	21 11.5
19	3 1 52.07	11.235	14 47 3.5	49.18	21 12.1
20	3 6 22.31	11.285	15 6 36.2	48.52	21 12.7
21	3 10 53.76	11.335	15 25 52.6	47.83	21 13.3
22	3 15 26.42	11.386	15 44 52.0	47.10	21 14.0
23	3 20 0.30	11.437	16 3 33.8	46.35	21 14.6
24	3 24 35.41	11.488	16 21 57.0	45.57	21 15.3
25	3 29 11.73	11.539	16 40 1.2	44.76	21 16.0
26	3 33 49.27	11.589	16 57 45.5	43.92	21 16.7
27	3 38 28.02	11.640	17 15 9.2	43.05	21 17.4
28	3 43 7.98	11.690	17 32 11.6	42.14	21 18.1
29	3 47 49.16	11.740	17 48 52.0	41.21	21 18.8
30	3 52 31.52	11.790	18 5 9.6	40.25	21 19.5
31	3 57 15.09	11.840	18 21 4.0	39.26	21 20.3
32	4 1 59.84	+11.890	+18 36 34.3	+38.24	21 21.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	8″.9	8″.6	8″.2	7″.9	7″.7	7″.4
Hor. Parallax	9.2	8.8	8.5	8.2	8.0	7.7

NOTE.—North declinations are marked +, south declinations −.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 57 15.09	+11.840	+18 21 4.0	+39.26	21 20.3
2	4 1 59.84	11.890	18 36 34.3	38.24	21 21.1
3	4 6 45.77	11.939	18 51 39.9	37.20	21 22.0
4	4 11 32.85	11.987	19 6 20.1	36.14	21 22.9
5	4 16 21.11	12.035	19 20 34.4	35.04	21 33.8
6	4 21 10.51	12.082	19 34 22.0	33.92	21 24.7
7	4 26 1.04	12.128	19 47 42.4	32.77	21 25.6
8	4 30 52.66	12.174	20 0 34.9	31.60	21 26.5
9	4 35 45.39	12.219	20 12 59.1	30.41	21 27.4
10	4 40 39.19	12.264	20 24 54.2	29.18	21 28.4
11	4 45 34.06	12.308	20 36 19.7	27.94	21 29.4
12	4 50 29.98	12.352	20 47 15.0	26.67	21 30.4
13	4 55 26.93	12.394	20 57 39.5	25.39	21 31.4
14	5 0 24.89	12.434	21 7 32.8	24.07	21 32.5
15	5 5 23.78	12.474	21 16 54.5	22.72	21 33.5
16	5 10 23.61	12.513	21 25 43.8	21.37	21 34.6
17	5 15 24.37	12.550	21 34 0.1	19.98	21 35.7
18	5 20 26.03	12.587	21 41 42.9	18.58	21 36.8
19	5 25 28.53	12.621	21 48 52.0	17.16	21 37.9
20	5 30 31.83	12.653	21 55 27.1	15.73	21 39.0
21	5 35 35.89	12.685	22 1 27.5	14.28	21 40.1
22	5 40 40.69	12.715	22 6 52.9	12.81	21 41.2
23	5 45 46.16	12.743	22 11 42.8	11.33	21 42.3
24	5 50 52.28	12.768	22 15 57.1	9.84	21 43.5
25	5 55 58.99	12.792	22 19 35.1	8.32	21 44.8
26	6 1 6.25	12.814	22 22 36.8	6.80	21 45.9
27	6 6 14.00	12.832	22 25 1.9	5.27	21 47.1
28	6 11 22.20	12.850	22 26 50.2	3.73	21 48.3
29	6 16 30.78	12.865	22 28 1.2	2.17	21 49.5
30	6 21 39.71	12.878	22 28 34.7	+ 0.61	21 50.8
31	6 26 48.93	12.890	22 28 30.9	− 0.95	21 52.0
32	6 31 58.40	+12.898	+22 27 49.5	− 2.51	21 53.2

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	7″.2	7″.0	6″.9	6″.7	6″.5	6″.4
Hor. Parallax	7.5	7 3	7.1	6.9	6.8	6.6

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 31 58.40	+12.898	+22 27 49.5	− 2.51	21 53.2
2	6 37 8.06	12.906	22 26 30.4	4.08	21 54.4
3	6 42 17.85	12.910	22 24 33.5	5.66	21 55.6
4	6 47 27.72	12.912	22 21 58.7	7.23	21 56.8
5	6 52 37.63	12.912	22 18 46.1	8.81	21 58.1
6	6 57 47.55	12.912	22 14 55.6	10.39	21 59.3
7	7 2 57.42	12.909	22 10 27.2	11.97	22 0.6
8	7 8 7.19	12.904	22 5 21.0	13.54	22 1.8
9	7 13 16.80	12.896	21 59 37.0	15.11	22 3.1
10	7 18 26.22	12.887	21 53 15.3	16.68	22 4.3
11	7 23 35.42	12.877	21 46 16.0	18.25	22 5 5
12	7 28 44.34	12.864	21 38 39.3	19.80	22 6.7
13	7 33 52.95	12.851	21 30 25.5	21.35	22 7.9
14	7 39 1.19	12.835	21 21 34.6	22.89	22 9.1
15	7 44 9.04	12.818	21 12 6.8	24.42	22 10.2
16	7 49 16.45	12.799	21 2 2.4	25.95	22 11.4
17	7 51 23.40	12.779	20 51 21.7	27.45	22 12.5
18	7 59 29.83	12.757	20 40 4.9	28.94	22 13.7
19	8 4 35.73	12.733	20 28 12.4	30.42	22 14.9
20	8 9 41.04	12.708	20 15 44.4	31.89	22 16.0
21	8 14 45.75	12.683	20 2 41.4	33.34	22 17.2
22	8 19 49.81	12.655	19 49 3.9	34.78	22 18.3
23	8 24 53.21	12.627	19 34 52.2	36.20	22 19.4
24	8 29 55.90	12.597	19 20 6.6	37.61	22 20.5
25	8 34 57.87	12.566	19 4 47.5	38.98	22 21.5
26	8 39 59.08	12.535	18 48 55.9	40.33	22 22.6
27	8 44 59.52	12.502	18 32 31.8	41.67	22 23.6
28	8 49 59.17	12.468	18 15 35.9	42.96	22 24.7
29	8 54 58.02	12.434	17 58 8.7	44.28	22 25.7
30	8 59 56.04	12.399	17 40 10.7	45.55	22 26.7
31	9 4 53.22	12.365	17 21 42.4	46.80	22 27.7
32	9 9 49.56	+12.330	+17 2 44.5	−48.02	22 28.7

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	6″.2	6″.1	6″.0	5″.9	5″.8	5″.7
Hor. Parallax	6.5	6.3	6.2	6.1	6.0	5.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 9 49.56	+12.330	+17 2 44.5	−48.02	22 28.7
2	9 14 45.03	12.294	16 43 17.6	49.22	22 29.6
3	9 19 39.65	12.258	16 23 22.2	50.39	22 30.6
4	9 24 33.40	12.222	16 2 58.8	51.55	22 31.5
5	9 29 26.28	12.186	15 42 8.1	52.67	22 32.4
6	9 34 18.30	12.150	15 20 50.8	53 77	22 33.3
7	9 39 9.46	12.114	14 59 7.3	54.84	22 34.2
8	9 43 59.77	12.078	14 36 58.2	55.90	22 35.1
9	9 48 49.23	12.044	14 14 24.5	56.92	22 36.0
10	9 53 37.87	12.009	13 51 26.5	57.91	22 36.8
11	9 58 25.67	11.975	13 28 5.0	58.88	22 37.7
12	10 3 12.66	11.941	13 4 20.4	59.82	22 38.5
13	10 7 58.87	11.909	12 40 13.6	60.75	22 39.3
14	10 12 44.31	11.877	12 15 45.1	61.64	22 40.1
15	10 17 28.99	11.845	11 50 55.6	62.49	22 40.9
16	10 22 12.93	11.815	11 25 45.9	63.32	22 41.7
17	10 26 56.15	11.786	11 0 16.5	64.12	22 42.5
18	10 31 38.67	11.758	10 34 28.2	64.90	22 43.2
19	10 36 20.52	11.731	10 8 21.6	65.64	22 44.0
20	10 41 1.72	11.703	9 41 57.5	66.36	22 44.8
21	10 45 42.28	11.678	9 15 16.6	67.04	22 45.6
22	10 50 22.24	11.653	8 48 19.6	67.70	22 46.3
23	10 55 1.62	11.630	8 21 7.2	68.33	22 47.0
24	10 59 40.45	11.607	7 53 40.1	68.92	22 47.7
25	11 4 18.76	11.585	7 25 59.1	69.49	22 48.4
26	11 8 56.58	11.566	6 58 4.8	70.03	22 49.1
27	11 13 33.93	11.547	6 29 58.1	70.52	22 49.8
28	11 18 10.84	11.530	6 1 39.6	71.00	22 50.5
29	11 22 47.34	11.514	5 33 10.0	71.45	22 51.1
30	11 27 23.46	11.498	5 4 30.1	71.87	22 51.7
31	11 31 59.25	11.485	4 35 40.7	72.24	22 52.4
32	11 36 34.74	+11.474	+ 4 6 42.4	−72.60	22 53.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	5″.6	5″.5	5″.5	5″.4	5″.4	5″.3
Hor. Parallax	5.8	5.7	5.7	5.6	5.5	5.5

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 31 59.25	+11.485	+ 4 35 40.7	−72.24	22 52.4
2	11 36 34.74	11.474	4 6 42.4	72.60	22 53.0
3	11 41 9.97	11.464	3 37 36.1	72.93	22 53.7
4	11 45 44.94	11.454	3 8 22.4	73.22	22 54.3
5	11 50 19.73	11.447	2 39 1.9	73.48	22 54.9
6	11 54 54.37	11.441	2 9 35.5	73.72	22 55.5
7	11 59 28.88	11.437	1 40 3.8	73.91	22 56.2
8	12 4 3.50	11.435	1 10 27.6	74.09	22 56.8
9	12 8 37.69	11.433	0 40 47.9	74.23	22 57.4
10	12 13 12.08	11.434	+ 0 11 4.6	74.35	22 58.0
11	12 17 46.50	11.436	− 0 18 40.9	74.43	22 58.7
12	12 22 21.02	11.441	0 48 28.1	74.48	22 59.3
13	12 26 55.67	11.447	1 18 16.1	74.50	23 0.0
14	12 31 30.49	11.454	1 48 4.3	74.50	23 0.6
15	12 36 5.51	11.464	2 17 51.9	74.46	23 1.3
16	12 40 40.78	11.476	2 47 38.2	74.39	23 1.9
17	12 45 16.35	11.489	3 17 22.4	74.30	23 2.6
18	12 49 52.25	11.504	3 47 3.9	74.17	23 3.2
19	12 54 28.53	11.520	4 16 41.7	74.01	23 3.9
20	12 59 5.20	11.538	4 46 15.2	73.80	23 4.5
21	13 3 42.34	11.558	5 15 43.6	73.57	23 5.2
22	13 8 19.96	11.578	5 45 6.2	73.30	23 5.9
23	13 12 58.11	11.601	6 14 22.0	73.01	23 6.6
24	13 17 36.81	11.625	6 43 30.4	72.69	23 7.3
25	13 22 16.12	11.650	7 12 30.5	72.33	23 8.0
26	13 26 56.06	11.678	7 41 21.6	71.93	23 8.7
27	13 31 36.66	11.707	8 10 2.8	71.51	23 9.4
28	13 36 17.97	11.737	8 38 33.4	71.05	23 10.1
29	13 41 0.02	11.768	9 6 52.5	70.56	23 10.9
30	13 45 42.84	11.801	9 34 59.4	70.03	23 11.7
31	13 50 26.47	11.835	10 2 53.4	69.47	23 12.5
32	13 55 10.94	+11.871	−10 30 33.6	−68.87	23 13.4

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	5″.3	5″.2	5″.2	5″.1	5″.1	5″.1
Hor. Parallax	5.4	5.4	5.4	5.3	5.3	5.3

NOTE.—North declinations are marked +, south declinations −.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 55 10.94	+11.871	−10 30 33.6	−68.87	23 13.4
2	13 59 56.27	11.908	10 57 59.1	68.25	23 14.2
3	14 4 42.50	11.946	11 25 9.3	67.60	23 15.1
4	14 9 29.66	11.986	11 52 3.3	66.91	23 15.9
5	14 14 17.78	12.025	12 18 40.2	66.19	23 16.8
6	14 19 6.89	12.067	12 44 59.4	65.43	23 17.7
7	14 23 57.04	12.111	13 11 0.0	64.64	23 18.6
8	14 28 48.22	12.156	13 36 41.3	63.82	23 19.5
9	14 33 40.47	12.201	14 2 2.5	62.96	23 20.5
10	14 38 33.82	12.246	14 27 2.8	62.07	23 21.5
11	14 43 28.29	12.293	14 51 41.3	61.14	23 22.5
12	14 48 23.90	12.341	15 15 57.2	60.19	23 23 5
13	14 53 20.68	12.391	15 39 49.7	59.20	23 24.5
14	14 58 18.64	12.440	16 3 18.1	58.17	23 25.5
15	15 3 17.79	12.490	16 26 21.8	57.12	23 26.6
16	15 8 18.16	12.540	16 48 59.6	56.03	23 27.7
17	15 13 19.74	12.591	17 11 10.9	54.91	23 28.8
18	15 18 22.54	12.642	17 32 54.7	53.74	23 29.9
19	15 23 26.58	12.694	17 54 10.2	52.55	23 31.0
20	15 28 31.85	12.745	18 14 56.8	51.33	23 32.2
21	15 33 38.36	12.797	18 35 13.7	50.07	23 33.4
22	15 38 46.08	12.848	18 55 0.1	48.79	23 34.6
23	15 43 55.03	12.898	19 14 15.5	47.48	23 35.8
24	15 49 5.19	12.949	19 32 58.8	46.13	23 37.0
25	15 54 16.55	12.999	19 51 9.3	44.75	23 38.3
26	15 59 29.11	13.048	20 8 46.3	43.33	23 39.6
27	16 4 42.83	13.096	20 25 49.1	41.90	23 40.8
28	16 9 57.70	13.143	20 42 16.9	40.42	23 42.2
29	16 15 13.68	13.190	20 58 9.1	38.93	23 43.6
30	16 20 30.78	13.235	21 13 25.0	37.40	23 44.9
31	16 25 48.95	13.279	21 28 4.2	35.86	23 46.3
32	16 31 8.16	+13.322	−21 42 5.7	−34.27	23 47.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	5.1	5.0	5.0	5.0	5.0	5.0
Hor. Parallax	5.2	5.2	5.2	5.2	5.2	5.2

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 25 48.95	+13.279	−21 28 4.2	−35.86	23 46.3
2	16 31 8.16	13.322	21 42 5.7	34.27	23 47.7
3	16 36 28.39	13.363	21 55 29.1	32.67	23 49.1
4	16 41 49.59	13.404	22 8 13.7	31.04	23 50.5
5	16 47 11.74	13.442	22 20 19.1	29.39	23 52.0
6	16 52 34.79	13.478	22 31 44.6	27.73	23 53.4
7	16 57 58.71	13.513	22 42 29.8	26.03	23 54.9
8	17 3 23.44	13.547	22 52 34.1	24.32	23 56.4
9	17 8 48.94	13.578	23 1 57.2	22.59	23 57.9
10	17 14 15.18	13.608	23 10 38.5	20.85	23 59.4
11	17 19 42.09	13.634	23 18 37.7	19.08	
12	17 25 9.63	13.660	23 25 54.1	17.30	0 1.0
13	17 30 37.77	13.683	23 32 27.7	15.51	0 2.5
14	17 36 6.42	13.704	23 38 18.0	13.69	0 4.1
15	17 41 35.53	13.721	23 43 24.8	11.87	0 5.6
16	17 47 5.04	13.737	23 47 47.6	10.04	0 7.2
17	17 52 34.89	13.750	23 51 26.5	8.20	0 8.7
18	17 58 5.03	13.761	23 54 21.0	6.36	0 10.3
19	18 3 35.40	13.769	23 56 31.1	4.50	0 11.8
20	18 9 5.92	13.773	23 57 56.7	2.64	0 13.4
21	18 14 36.51	13.775	23 58 37.7	− 0.78	0 14.9
22	18 20 7.11	13.775	23 58 34.0	+ 1.08	0 16.5
23	18 25 37.68	13.771	23 57 45.5	2.95	0 18.0
24	18 31 8.12	13.765	23 56 12.2	4.81	0 19.6
25	18 36 38.39	13.756	23 53 54.4	6.67	0 21.2
26	18 42 8.39	13.741	23 50 51.9	8.52	0 22.8
27	18 47 38.08	13.729	23 47 5.0	10.37	0 24.3
28	18 53 7.38	13.712	23 42 33.9	12.22	0 25.9
29	18 58 36.26	13.692	23 37 18.7	14.05	0 27.5
30	19 4 4.61	13.670	23 31 19.6	15.87	0 29.0
31	19 9 32.40	13.645	23 24 37.0	17.68	0 30.5
32	19 14 59.55	+13.617	−23 17 11.0	+19.48	0 32.0

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
	″	″	″	″	″	″	″
Semidiameter	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Hor. Parallax	5.2	5.2	5.2	5.2	5.2	5.2	5.2

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 44 59.06	+5.297	+ 5 4 52.2	+37.20	6 0.5
2	0 47 6.50	5.319	5 19 45.1	37.19	5 58.7
3	0 49 14.46	5.341	5 34 37.6	37.17	5 56.9
4	0 51 22.93	5.363	5 49 29.6	37.15	5 55.1
5	0 53 31.91	5.384	6 4 21.0	37.12	5 53.3
6	0 55 41.40	5.406	6 19 11.7	37.09	5 51.5
7	0 57 51.39	5.427	6 34 1.5	37.05	5 49.7
8	1 0 1.88	5.448	6 48 50.3	37.00	5 47.9
9	1 2 12.87	5.468	7 3 37.8	36.94	5 46.2
10	1 4 24.34	5.488	7 18 23.8	36.88	5 44.4
11	1 6 36.28	5.507	7 33 8.3	36.82	5 42.7
12	1 8 48.69	5.527	7 47 51.2	36.75	5 41.0
13	1 11 1.56	5.546	8 2 32.4	36.68	5 39.3
14	1 13 14.88	5.564	8 17 11.6	36.59	5 37.5
15	1 15 28.65	5.583	8 31 48.6	36.49	5 35.8
16	1 17 42.87	5.601	8 46 23.3	36.39	5 34.1
17	1 19 57.52	5.619	9 0 55.6	36.29	5 32.4
18	1 22 12.60	5.637	9 15 25.3	36.18	5 30.7
19	1 24 28.10	5.655	9 29 52.5	36.07	5 29.1
20	1 26 54.03	5.673	9 44 16.9	35.95	5 27.4
21	1 29 0.39	5.690	9 58 38.3	35.83	5 25.7
22	1 31 17.17	5.708	10 12 56.8	35.70	5 24.1
23	1 33 34.38	5.726	10 27 12.2	35.58	5 22.4
24	1 35 52.01	5.743	10 41 24.4	35.45	5 20.8
25	1 38 10.06	5.761	10 55 33.4	35.30	5 19.1
26	1 40 28.54	5.779	11 9 38.9	35.16	5 17.5
27	1 42 47.46	5.797	11 23 40.9	35.00	5 15.9
28	1 45 6.81	5.815	11 37 39.2	34.85	5 14.3
29	1 47 26.59	5.833	11 51 33.8	34.69	5 12.7
30	1 49 46.80	5.851	12 5 24.7	34.53	5 11.1
31	1 52 7.44	5.868	12 19 11.6	34.36	5 9.5
32	1 54 28.51	+5.886	+12 32 54.4	+34.19	5 7.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	4″.6	4″.4	4″.3	4″.1	3″.9	3″.8
Hor. Parallax	8.1	7.8	7.5	7.2	6.9	6.7

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	1 54 28.51	+5.886	+12 32 54.4	+34.19	5 7.9
2	1 56 50.00	5.905	12 46 32.9	34.02	5 6.3
3	1 59 11.92	5.923	13 0 7.1	33.83	5 4.7
4	2 1 34.27	5.940	13 13 36.9	33.64	5 3.2
5	2 3 57.04	5.957	13 27 2.0	33.44	5 1.6
6	2 6 20.24	5.975	13 40 22.4	33.24	5 0.1
7	2 8 43.85	5.992	13 53 37.9	33.04	4 58.5
8	2 11 7.86	6.009	14 6 48.4	32.83	4 57.0
9	2 13 32.27	6.026	14 19 53.8	32.61	4 55.4
10	2 15 57.08	6.043	14 32 53.9	32.39	4 53.9
11	2 18 22.28	6.059	14 45 48.6	32.16	4 52.4
12	2 20 47.88	6.075	14 58 37.8	31.93	4 50.9
13	2 23 13.88	6.091	15 11 21.3	31.69	4 49.4
14	2 25 40.27	6.108	15 23 59.0	31.44	4 47.9
15	2 28 7.04	6.124	15 36 30.8	31.19	4 46.4
16	2 30 34.19	6.139	15 48 56.5	30.93	4 44.9
17	2 33 1.73	6.155	16 1 16.0	30.67	4 43.4
18	2 35 29.64	6.171	16 13 29.4	30.42	4 42.0
19	2 37 57.93	6.187	16 25 36.5	30.16	4 40.5
20	2 40 26.61	6.203	16 37 37.2	29.89	4 39.0
21	2 42 55.67	6.219	16 49 31.4	29.62	4 37.6
22	2 45 25.10	6.235	17 1 19.0	29.35	4 36.1
23	2 47 54.92	6.251	17 12 59.9	29.06	4 34.7
24	2 50 25.12	6.267	17 24 34.0	28.77	4 33.2
25	2 52 55.71	6.283	17 36 1.1	28.48	4 31.8
26	2 55 26.68	6.299	17 47 21.3	28.18	4 30.4
27	2 57 58.04	6.315	17 58 34.3	27.88	4 29.0
28	3 0 29.79	6.331	18 9 40.0	27.58	4 27.6
29	3 3 1.91	6.347	18 20 38.5	27.27	4 26.2
30	3 5 34.42	6.363	18 31 29.6	26.96	4 24.8
31	3 8 7.31	6.379	18 42 13.2	26.65	4 23.4
32	3 10 40.57	+6.394	+18 52 49.2	+26.33	4 22.0

Day of the Month.	0.	5th.	10th.	15th.	20th.	25th.
Semidiameter	3″.7	3″.6	3″.4	3″.3	3″.2	3″.1
Hor. Parallax	6.4	6.2	6.0	5.9	5.7	5.5

NOTE.—North declinations are marked +, south declinations —.

MARS, 1878.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 3 1.91	+6.347	+18 20 38.5	+27.27	4 26.2
2	3 5 34.42	6.363	18 31 29.6	26.96	4 24.8
3	3 8 7.31	6.379	18 42 13.2	26.65	4 23.4
4	3 10 40.57	6.394	18 52 49.2	26.33	4 22.0
5	3 13 14.21	6.410	19 3 17.5	26.01	4 20.6
6	3 15 48.23	6.425	19 13 37.9	25.68	4 19.2
7	3 18 22.60	6.440	19 23 50.4	25.35	4 17.9
8	3 20 57.33	6.455	19 33 54.8	25.01	4 16.5
9	3 23 32.42	6.469	19 43 50.9	24.66	4 15.1
10	3 26 7.86	6.483	19 53 38.7	24.32	4 13.8
11	3 28 43.63	6.497	20 3 18.1	23.96	4 12.5
12	3 31 19.73	6.511	20 12 49.1	23.60	4 11.1
13	3 33 56.17	6.525	20 22 11.5	23.24	4 9.8
14	3 36 32.94	6.539	20 31 25.2	22.87	4 8.4
15	3 39 10.02	6.552	20 40 30.2	22.51	4 7.1
16	3 41 47.42	6.565	20 49 26.3	22.14	4 5.8
17	3 44 25.12	6.578	20 58 13.4	21.77	4 4.5
18	3 47 3.15	6.590	21 6 51.5	21.39	4 3.2
19	3 49 41.47	6.603	21 15 20.5	21.01	4 1.9
20	3 52 20.09	6.615	21 23 40.3	20.63	4 0.6
21	3 54 59.02	6.628	21 31 50.9	20.24	3 59.3
22	3 57 38.23	6.640	21 39 52.2	19.85	3 58.0
23	4 0 17.74	6.653	21 47 44.1	19.45	3 56.7
24	4 2 57.54	6.665	21 55 26.5	19.06	3 55.5
25	4 5 37.62	6.677	22 2 59.4	18.66	3 54.2
26	4 8 17.99	6.688	22 10 22.7	18.26	3 52.9
27	4 10 58.65	6.699	22 17 36.3	17.86	3 51.7
28	4 13 39.59	6.711	22 24 40.1	17.45	3 50.4
29	4 16 20.80	6.723	22 31 34.1	17.04	3 49.1
30	4 19 2.28	6.734	22 38 18.3	16.63	3 47.9
31	4 21 44.03	6.745	22 44 52.5	16.21	3 46.6
32	4 24 26.04	+6.756	+22 51 16.6	+15.79	3 45.4

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	3″.1	3″.0	2″.9	2″.8	2″.8	2″.7
Hor. Parallax	5.4	5.2	5.1	4.9	4.8	4.7

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 24 26 04	+6.756	+22 51 16.6	+15.79	3 45.4
2	4 27 8.31	6.766	22 57 30.6	15.37	3 44.2
3	4 29 50.81	6.776	23 3 34.5	14.95	3 42.9
4	4 32 33.55	6.786	23 9 28.2	14.52	3 41.7
5	4 35 16.52	6.795	23 15 11.5	14.09	3 40.5
6	4 37 59.71	6.804	23 20 44.5	13.65	3 39.3
7	4 40 43.11	6.812	23 26 7.0	13.21	3 38.0
8	4 43 26.72	6.820	23 31 19.1	12.78	3 36.8
9	4 46 10.51	6.828	23 36 20.7	12.34	3 35.6
10	4 48 54.49	6.836	23 41 11.7	11.90	3 34.4
11	4 51 38.64	6.843	23 45 52.0	11.45	3 33.2
12	4 54 22.97	6.850	23 50 21.7	11.01	3 32.0
13	4 57 7.46	6.857	23 54 40.7	10.56	3 30.8
14	4 59 52.09	6.863	23 58 48.9	10.11	3 29.6
15	5 2 36.86	6.868	24 2 46.2	9.65	3 28.4
16	5 5 21.77	6.874	24 6 32.7	9.20	3 27.2
17	5 8 6.81	6.879	24 10 8.4	8.75	3 26.0
18	5 10 51.98	6.884	24 13 33.2	8.30	3 24.8
19	5 13 37.26	6.888	24 16 47.2	7.85	3 23.6
20	5 16 22.64	6.893	24 19 50.2	7.39	3 22.4
21	5 19 8.13	6.898	24 22 42.2	6.93	3 21.3
22	5 21 53.73	6.902	24 25 23.3	6.47	3 20.1
23	5 24 39.42	6.906	24 27 53.4	6.01	3 18.9
24	5 27 25.20	6.910	24 30 12.4	5.55	3 17.7
25	5 30 11.07	6.913	24 32 20.3	5.09	3 16.6
26	5 32 57.01	6.916	24 34 17.2	4.63	3 15.4
27	5 35 43.02	6.919	24 36 33.0	4.17	3 14.2
28	5 38 29.09	6.921	24 37 37.6	3.70	3 13.0
29	5 41 15.21	6.923	24 39 1.2	3.24	3 11.9
30	5 44 1.38	6.925	24 40 13.6	2.78	3 10.7
31	5 46 47.59	6.927	24 41 14.9	2.31	3 9.5
32	5 49 33.83	+6.928	+24 42 5.0	+ 1.85	3 8.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	2″.6	2″.6	2″.5	2″.5	2″.4	2″.4
Hor. Parallax	4.6	4.5	4.4	4.3	4.2	4.2

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

MARS, 1878.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 46 47.59	+6.927	+24 41 14.9	+ 2.31	3 9.5
2	5 49 33.83	6.928	24 42 5.0	1.85	3 8.3
3	5 52 20.09	6.928	24 42 43.9	1.38	3 7.2
4	5 55 6.35	6.928	24 43 11.8	0.91	3 6.0
5	5 57 52.62	6.928	24 43 28.4	+ 0.45	3 4.8
6	6 0 38.87	6.927	24 43 33.9	− 0.01	3 3.6
7	6 3 25.09	6.926	24 43 28.3	0.48	3 2.5
8	6 6 11.29	6.924	24 43 11.5	0.94	3 1.3
9	6 8 57.44	6.922	24 42 43.6	1.40	3 0.1
10	6 11 43.54	6.920	24 42 4.6	1.86	2 59.0
11	6 14 29.58	6.917	24 41 14.6	2.32	2 57.8
12	6 17 15.56	6.914	24 40 13.5	2.79	2 56.6
13	6 20 1.46	6.911	24 39 1.3	3.25	2 55.4
14	6 22 47.26	6.907	24 37 38.0	3.71	2 54.3
15	6 25 32.98	6.903	24 36 3.8	4.16	2 53.1
16	6 28 18.60	6.899	24 34 18.6	4.62	2 51.9
17	6 31 4.12	6.894	24 32 22.5	5.07	2 50.7
18	6 33 49.53	6.889	24 30 15.4	5.53	2 49.5
19	6 36 34.82	6.884	24 27 57.5	5.98	2 48.3
20	6 39 19.99	6.879	24 25 28.7	6.43	2 47.2
21	6 42 5.04	6.874	24 22 49.1	6.88	2 46.0
22	6 44 49.95	6.868	24 19 58.7	7.33	2 44.8
23	6 47 34.73	6.862	24 16 57.5	7.78	2 43.6
24	6 50 19.37	6.856	24 13 45.5	8.22	2 42.4
25	6 53 3.87	6.850	24 10 22.9	8.67	2 41.2
26	6 55 48.21	6.844	24 6 49.5	9.12	2 40.0
27	6 58 32.39	6.838	24 3 5.5	9.56	2 38.8
28	7 1 16.41	6.831	23 59 10.9	10.00	2 37.5
29	7 4 0.26	6.824	23 55 5.8	10.43	2 36.3
30	7 6 43.94	6.816	23 50 50.2	10.86	2 35.1
31	7 9 27.43	6.809	23 46 24.2	11.30	2 33.9
32	7 12 10.74	+6.801	+23 41 47.8	−11.74	2 32.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	2.″3	2.″3	2.″3	2.″2	2.″2	2.″2	2.″1
Hor. Parallax	4.1	4.0	4.0	3.9	3.9	3.8	3.7

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	7 12 10.74	+6.801	+23 41 47.8	−11.74	2 32.7
2	7 14 53.85	6.792	23 37 1.0	12.16	2 31.5
3	7 17 36.76	6.784	23 32 4.0	12.59	2 30.3
4	7 20 19.45	6.775	23 26 56.7	13.01	2 29.0
5	7 23 1.92	6.765	23 21 39.3	13.43	2 27.8
6	7 25 44.16	6.755	23 16 11.8	13.85	2 26.5
7	7 28 26.17	6.745	23 10 34.3	14.26	2 25.3
8	7 31 7.95	6.735	23 4 46.9	14.67	2 24.0
9	7 33 49.48	6.725	22 58 49.6	15.08	2 22.8
10	7 36 30.77	6.714	22 52 42.5	15.49	2 21.6
11	7 39 11.81	6.703	22 46 25.7	15.90	2 20.3
12	7 41 52.59	6.693	22 39 59.2	16.30	2 19.0
13	7 44 33.11	6.683	22 33 23.0	16.70	2 17.8
14	7 47 13.37	6.672	22 26 37.3	17.10	2 16.5
15	7 49 53.37	6.661	22 19 42.1	17.50	2 15.2
16	7 52 33.10	6.650	22 12 37.5	17.89	2 13.9
17	7 55 12.56	6.638	22 5 23.5	18.27	2 12.6
18	7 57 51.75	6.627	21 58 0.2	18.66	2 11.4
19	8 0 30.68	6.616	21 50 27.7	19.05	2 10.1
20	8 3 9.33	6.604	21 42 46.0	19.42	2 8.8
21	8 5 47.72	6.593	21 34 55.3	19.80	2 7.4
22	8 8 25.84	6.583	21 26 55.6	20.18	2 6.1
23	8 11 3.69	6.572	21 18 46.8	20.54	2 4.8
24	8 13 41.26	6.560	21 10 29.2	20.91	2 3.5
25	8 16 18.56	6.548	21 2 2.9	21.28	2 2.2
26	8 18 55.59	6.537	20 53 27.8	21.64	2 0.9
27	8 21 32.34	6.525	20 44 44.1	22.00	1 59.6
28	8 24 8.81	6.513	20 35 51.7	22.36	1 58.2
29	8 26 45.00	6.501	20 26 50.8	22.71	1 56.9
30	8 29 20.90	6.489	20 17 41.5	23.06	1 55.5
31	8 31 56.52	6.477	20 8 23.9	23.40	1 54.2
32	8 34 31.85	+6.465	+19 58 58.1	−23.74	1 52.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	2.″1	2.″1	2.″1	2.″0	2.″0	2.″0
Hor. Parallax	3.7	3.7	3.6	3.6	3.6	3.5

NOTE.—North declinations are marked +, south declinations −.

MARS, 1878.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 31 56.52	+6.477	+20 8 23.9	−23.40	1 54.2
2	8 34 31.85	6.465	19 58 58.1	23.74	1 52.8
3	8 37 6.89	6.453	19 49 24.2	24.08	1 51.5
4	8 39 41.64	6.441	19 39 42.3	24.41	1 50.1
5	8 42 16.11	6.429	19 29 52.5	24.74	1 48.7
6	8 44 50.27	6.417	19 19 54.8	25.06	1 47.4
7	8 47 24.13	6.405	19 9 49.3	25.39	1 46.0
8	8 49 57.71	6.393	18 59 36.1	25.70	1 44.6
9	8 52 30.99	6.381	18 49 15.3	26.02	1 43.3
10	8 55 3.98	6.369	18 38 47.0	26.33	1 41.9
11	8 57 36.68	6.356	18 28 11.3	26.64	1 40.5
12	9 0 9.08	6.344	18 17 28.3	26.94	1 39.1
13	9 2 41.19	6.332	18 6 38.0	27.24	1 37.7
14	9 5 13.01	6.320	17 55 40.6	27.54	1 36.2
15	9 7 44.54	6.309	17 44 36.1	27.84	1 34.8
16	9 10 15.80	6.297	17 33 24.6	28.13	1 33.4
17	9 12 46.78	6.286	17 22 6.1	28.41	1 32.0
18	9 15 17.49	6.275	17 10 40.8	28.70	1 30.5
19	9 17 47.93	6.264	16 59 8.8	28.98	1 29.1
20	9 20 18.10	6.252	16 47 30.0	29.26	1 27.7
21	9 22 48.00	6.241	16 35 44.5	29.53	1 26.2
22	9 25 17.65	6.230	16 23 52.5	29.80	1 24.8
23	9 27 47.05	6.220	16 11 54.0	30.07	1 23.3
24	9 30 16.20	6.210	15 59 49.1	30.33	1 21.9
25	9 32 45.09	6.199	15 47 38.0	30.59	1 20.4
26	9 35 13.73	6.188	15 35 20.7	30.84	1 18.9
27	9 37 42.12	6.178	15 22 57.2	31.09	1 17.5
28	9 40 10.27	6.168	15 10 27.8	31.34	1 16.0
29	9 42 38.18	6.158	14 57 52.5	31.59	1 14.5
30	9 45 5.85	6.148	14 45 11.3	31.83	1 13.0
31	9 47 33.28	6.138	14 32 24.4	32.06	1 11.5
32	9 50 0.48	+6.128	+14 19 31.9	−32.30	1 10.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	2″.0	2″.0	2″.0	1″.9	1″.9	1″.9
Hor. Parallax	3.5	3.5	3.4	3.4	3.4	3.4

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 50 0.48	+6.128	+14 19 31.9	−32.30	1 10.1
2	9 52 27.44	6.118	14 6 33.8	32.53	1 8.6
3	9 54 54.17	6.109	13 53 30.3	32.75	1 7.1
4	9 57 20.67	6.099	13 40 21.5	32.98	1 5.6
5	9 59 46.94	6.090	13 27 7.5	33.20	1 4.1
6	10 2 12.99	6,080	13 13 48.3	33.41	1 2.6
7	10 4 38.82	6.071	13 0 24.1	33.61	1 1.1
8	10 7 4.44	6.063	12 46 55.0	33.82	0 59.6
9	10 9 29.86	6.055	12 33 21.0	34.02	0 58.1
10	10 11 55.06	6.047	12 19 42.2	34.22	0 56.5
11	10 14 20.06	6.038	12 5 58.6	34.41	0 55.0
12	10 16 44.87	6.029	11 52 10.4	34.60	0 53.5
13	10 19 9.50	6.021	11 38 17.6	34.79	0 51.9
14	10 21 33.94	6.014	11 24 20.4	34.97	0 50.4
15	10 23 58.21	6.007	11 10 18.8	35.16	0 48.9
16	10 26 22.31	6.000	10 56 12.8	35.34	0 47.3
17	10 28 46.25	5.994	10 42 2.6	35.51	0 45.8
18	10 31 10.04	5.988	10 27 48.3	35.68	0 44.3
19	10 33 33.67	5.981	10 13 29.8	35.85	0 42.7
20	10 35 57.16	5.975	9 59 7.3	36.01	0 41.2
21	10 38 20.51	5.970	9 44 40.9	36.17	0 39.6
22	10 40 43.74	5.964	9 30 10.6	36.33	0 38.1
23	10 43 6.83	5.959	9 15 36.6	36.49	0 36.5
24	10 45 29.79	5.954	9 0 59.0	36.64	0 34.9
25	10 47 52.64	5.950	8 46 17.8	36.78	0 33.4
26	10 50 15.38	5.944	8 31 33.1	36.91	0 31.8
27	10 52 38.00	5.940	8 16 45.1	37.05	0 30.3
28	10 55 0.52	5.937	8 1 53.9	37.19	0 28.7
29	10 57 22.95	5.933	7 46 59.5	37.32	0 27.1
30	10 59 45.28	5.929	7 32 2.0	37.45	0 25.5
31	11 2 7.52	5.925	7 17 1.5	37.58	0 24.0
32	11 4 29.67	+5.922	+ 7 1 58.1	−37.70	0 22.4

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	1″.9	1″.9	1″.9	1″.9	1″.9	1″.9
Hor. Parallax	3.4	3.4	3.3	3.3	3.3	3.3

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	11 4 29.67	+5.922	+7 1 58.1	−37.70	0 22.4
2	11 6 51.74	5.918	6 46 52.0	37.81	0 20.8
3	11 9 13.73	5.915	6 31 43.2	37.92	0 19.3
4	11 11 35.65	5.912	6 16 31.8	38.03	0 17.7
5	11 13 57.50	5.910	6 1 18.0	38.13	0 16.1
6	11 16 19.29	5.907	5 46 1.7	38.22	0 14.5
7	11 18 41.02	5.905	5 30 43.1	38.32	0 13.0
8	11 21 2.71	5.903	5 15 22.2	38.41	0 11.4
9	11 23 24.36	5.901	4 59 59.1	38.50	0 9.8
10	11 25 45.98	5.900	4 44 34.0	38.58	0 8.2
11	11 28 7.57	5.899	4 29 7.0	38.66	0 6.6
12	11 30 29.14	5.898	4 13 38.1	38.74	0 5.0
13	11 32 50.70	5.898	3 58 7.3	38.82	0 3.5
14	11 35 12.26	5.898	3 42 34.6	38.90	0 1.9
15	11 37 33.82	5.899	3 27 0.3	38.97	{ 0 0.3 { 23 58.7
16	11 39 55.40	5.900	3 11 24.4	39.04	23 57.1
17	11 42 17.00	5.901	2 55 46.9	39.10	23 55.6
18	11 44 38.63	5.902	2 40 8.0	39.16	23 54.0
19	11 47 0.29	5.904	2 24 27.7	39.21	23 52.4
20	11 49 21.99	5.906	2 8 46.2	39.26	23 50.8
21	11 51 43.74	5.908	1 53 3.6	39.30	23 49.3
22	11 54 5.54	5.910	1 37 19.9	39.34	23 47.7
23	11 56 27.40	5.912	1 21 35.2	39.37	23 46.1
24	11 58 49.32	5.914	1 5 49.7	39.40	23 44.5
25	12 1 11.31	5.918	0 50 3.4	39.43	23 43.0
26	12 3 33.38	5.921	0 34 16.5	39.46	23 41.4
27	12 5 55.54	5.925	0 18 29.1	39.48	23 39.8
28	12 8 17.78	5.928	+0 2 41.3	39.50	23 38.3
29	12 10 40.10	5.932	−0 13 6.9	39.51	23 36.7
30	12 13 2.52	5.936	0 28 55.3	39.52	23 35.1
31	12 15 25.05	5.940	0 44 43.9	39.52	23 33.6
32	12 17 47.68	+5.945	−1 0 32.5	−39.52	23 32.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	1″.9	1″.9	1″.9	1″.9	1″.9	1″.9
Hor. Parallax	3.3	3.3	3.3	3.3	3.3	3.3

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	12 15 25.05	+5.940	−0 44 43.9	−39.52	23 33.6
2	12 17 47.68	5.945	1 0 32.5	39.52	23 32.0
3	12 20 10.43	5.950	1 16 21.0	39.51	23 30.5
4	12 22 33.30	5.955	1 32 9.3	39.50	23 28.9
5	12 24 56.29	5.961	1 47 57.4	39.49	23 27.3
6	12 27 19.42	5.966	2 3 45.1	39.47	23 25.8
7	12 29 42.69	5.972	2 19 32.4	39.45	23 24.2
8	12 32 6.09	5.978	2 35 19.2	39.43	23 22.6
9	12 34 29.64	5.985	2 51 5.3	39.40	23 21.1
10	12 36 53.38	5.992	3 6 50.6	39.37	23 19.6
11	12 39 17.29	6.000	3 22 35.2	39.34	23 18.0
12	12 41 41.39	6.007	3 38 18.9	39.30	23 16.5
13	12 44 5.66	6.015	3 54 1.6	39.26	23 15.0
14	12 46 30.13	6.024	4 9 43.3	39.21	23 13.4
15	12 48 54.80	6.033	4 25 23.8	39.16	23 11.9
16	12 51 19.69	6.042	4 41 3.0	39.11	23 10.4
17	12 53 44.79	6.051	4 56 40.8	39.05	23 8.9
18	12 56 10.12	6.060	5 12 17.2	38.98	23 7.4
19	12 58 35.69	6.070	5 27 52.1	38.91	23 5.8
20	13 1 1.50	6.080	5 43 25.2	38.84	23 4.3
21	13 3 27.54	6.091	5 58 56.5	38.76	23 2.8
22	13 5 53.84	6.101	6 14 25.9	38.68	23 1.3
23	13 8 20.40	6.112	6 29 53.3	38.59	22 59.8
24	13 10 47.22	6.123	6 45 18.5	38.50	22 58.3
25	13 13 14.30	6.135	7 0 41.5	38.40	22 56.8
26	13 15 41.66	6.146	7 16 2.1	38.30	22 55.4
27	13 18 9.29	6.158	7 31 20.1	38.19	22 53.9
28	13 20 37.21	6.170	7 46 35.5	38.08	22 52.4
29	13 23 5.41	6.181	8 1 48.2	37.97	22 51.0
30	13 25 33.90	6.193	8 16 58.1	37.85	22 49.5
31	13 28 2.68	6.206	8 32 5.0	97.72	22 48.0
32	13 30 31.75	+6.219	− 8 47 8.8	−37.59	22 46.6

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	1″.9	1″.9	1″.9	1″.9	1″.9	2″.0
Hor. Parallax	3.3	3.4	3.4	3.4	3.4	3.4

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 30 31.75	+6.219	− 8 47 8.8	−37.59	22 46.6
2	13 33 1.14	6.232	9 2 9.3	37.45	22 45.2
3	13 35 30.85	6.345	9 17 6.6	37.31	22 43.7
4	13 38 0.87	6.258	9 32 0.5	37.17	22 42.3
5	13 40 31.23	6.272	9 46 50.9	37.02	22 40.8
6	13 43 1.92	6.286	10 1 37.6	36.87	22 39.4
7	13 45 32.94	6.300	10 16 20.6	36.71	22 38.0
8	13 48 4.31	6.314	10 30 59.8	36.55	22 36.6
9	13 50 36.04	6.329	10 45 35.1	36.38	22 35.2
10	13 53 8.13	6.344	11 0 6.3	36.20	22 33.8
11	13 55 40.58	6.360	11 14 33.2	36.02	22 32.4
12	13 58 13.41	6.376	11 28 55.8	35.84	22 31.0
13	14 0 46.63	6.393	11 43 14.1	35.66	22 29.6
14	14 3 20.23	6.409	11 57 27.9	35.47	22 28.2
15	14 5 54.23	6.426	12 11 37.0	35.28	22 26.9
16	14 8 28.63	6.442	12 25 41.4	35.08	22 25.5
17	14 11 3.43	6.459	12 39 40.9	34.87	22 24.2
18	14 13 38.64	6.476	12 53 35.4	34.65	22 22.8
19	14 16 14.26	6.493	13 7 24.7	34.43	22 21.5
20	14 18 50.30	6.510	13 21 8.8	34.21	22 20.1
21	14 21 26.76	6.528	13 34 47.4	33.99	22 18.8
22	14 24 3.65	6.546	13 48 20.5	33.76	22 17.5
23	14 26 40.96	6.564	14 1 47.9	33.52	22 16.2
24	14 29 18.70	6.581	14 15 9.5	33.27	22 14.9
25	14 31 56.88	6.599	14 28 25.2	33.02	22 13.6
26	14 34 35.48	6.617	14 41 34.8	32.76	22 12.3
27	14 37 14.52	6.636	14 54 38.1	32.50	22 11.0
28	14 39 54.00	6.654	15 7 35.0	32.23	22 9.7
29	14 42 33.92	6.673	15 20 25.5	31.95	22 8.5
30	14 45 14.28	6.691	15 33 9.4	31.68	22 7.2
31	14 47 55.08	6.709	15 45 46.5	31.40	22 6.0
32	14 50 36.33	+6.728	−15 58 16.7	−31.11	22 4.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	2″.0	2″.0	2″.0	2″.0	2″.0	2″.1
Hor. Parallax	3.5	3.5	3.5	3.5	3.6	3.6

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 47 55.08	+6.709	−15 45 46.5	−31.40	22 6.0
2	14 50 36.33	6.728	15 58 16.7	31.11	22 4.7
3	14 53 18.04	6.747	16 10 40.0	30.82	22 3.4
4	14 56 0.20	6.767	16 22 56.3	30.52	22 2.2
5	14 58 42.83	6.786	16 35 5.4	30.21	22 1.0
6	15 1 25.91	6.805	16 47 7.0	29.90	21 59.8
7	15 4 9.47	6.824	16 59 1.0	29.58	21 58.6
8	15 6 53.49	6.844	17 10 47.4	29.27	21 57.4
9	15 9 37.98	6.864	17 22 26.2	28.95	21 56.2
10	15 12 22.95	6.884	17 33 57.2	28.62	21 55.0
11	15 15 8.41	6.905	17 45 20.3	28.28	21 53.8
12	15 17 54.34	6.925	17 56 35.3	27.94	21 52.7
13	15 20 40.77	6.945	18 7 42.0	27.60	21 51.5
14	15 23 27.68	6.965	18 18 40.3	27.25	21 50.3
15	15 26 15.08	6.985	18 29 30.1	26.89	21 49.2
16	15 29 2.97	7.006	18 40 11.3	26.52	21 48.1
17	15 31 51.35	7.026	18 50 43.7	26.15	21 46.9
18	15 34 40.21	7.046	19 1 7.2	25.77	21 45.8
19	15 37 29.56	7.066	19 11 21.6	25.40	21 44.7
20	15 40 19.39	7.086	19 21 26.8	25.02	21 43.6
21	15 43 9.70	7.106	19 31 22.7	24.62	21 42.5
22	15 46 0.49	7.126	19 41 9.1	24.23	21 41.4
23	15 48 51.75	7.146	19 50 45.9	23.82	21 40.3
24	15 51 43.49	7.166	20 0 13.0	23.41	21 39.2
25	15 54 35.68	7.185	20 9 30.2	23.00	21 38.2
26	15 57 28.34	7.203	20 18 37.6	22.59	21 37.1
27	16 0 21.46	7.222	20 27 34.9	22.17	21 36.1
28	16 3 15.03	7.242	20 36 21.9	21.74	21 35.0
29	16 6 9.06	7.261	20 44 58.5	21.30	21 34.0
30	16 9 3.54	7.280	20 53 24.6	20.86	21 33.0
31	16 11 58.46	7.298	21 1 40.2	20.42	21 31.9
32	16 14 53.82	+7.315	−21 9 45.1	−19.97	21 30.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	2″.1	2″.1	2″.1	2″.1	2″.2	2″.2
Hor. Parallax	3.6	3.7	3.7	3.8	3.8	3.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 1 53.74	+2.511	−22 48 17.3	+3.47	0 17.8
2	19 2 54.01	2.512	22 46 53.3	3.53	0 14.8
3	19 3 54.29	2.512	22 45 27.8	3.59	0 11.9
4	19 4 54.57	2.511	22 44 0.9	3.65	0 9.0
5	19 5 54.83	2.510	22 42 32.6	3.71	0 6.1
6	19 6 55.07	2.509	22 41 2.9	3.77	0 3.1
7	19 7 55.30	2.508	22 39 31.8	3.83	{ 0 0.2 { 23 57.3
8	19 8 55.50	2.507	22 37 59.4	3.89	23 54.4
9	19 9 55.67	2.506	22 36 25.6	3.94	33 51.4
10	19 10 55.80	2.504	22 34 50.5	4.00	23 48.5
11	19 11 55.88	2.502	22 33 14.0	4.06	23 45.6
12	19 12 55.91	2.500	22 31 36.2	4.11	23 42.7
13	19 13 55.88	2.497	22 29 57.1	4.16	23 39.7
14	19 14 55.77	2.494	22 28 16.8	4.21	23 36.8
15	19 15 56.59	2.491	22 26 35.2	4.26	23 33.8
16	19 16 55.34	2.488	22 24 52.3	4.31	23 30.9
17	19 17 55.01	2.485	22 23 8.1	4.36	23 27.9
18	19 18 54.59	2.481	22 21 22.8	4.41	23 25.0
19	19 19 54.08	2.477	22 19 36.3	4.46	23 22.0
20	19 20 53.47	2.473	22 17 48.6	4.51	23 19.1
21	19 21 52.76	2.469	22 15 59.7	4.56	23 16.1
22	19 22 51.94	2.464	22 14 9.7	4.60	23 13.2
23	19 23 51.00	2.459	22 12 18.6	4.65	23 10.2
24	19 24 49.95	2.454	22 10 26.4	4.70	23 7.3
25	19 25 48.78	2.448	22 8 33.1	4.75	23 4.3
26	19 26 47.47	2.442	22 6 38.7	4.80	23 1.4
27	19 27 46.03	2.436	22 4 43.2	4.84	22 58.4
28	19 28 44.44	2.430	22 2 46.7	4.88	22 55.4
29	19 29 42.70	2.424	22 0 49.1	4.92	22 52.4
30	19 30 40.80	2.417	21 58 50.6	4.96	22 49.5
31	19 31 38.74	2.410	21 56 51.1	5.00	22 46.5
32	19 32 36.52	+2.403	−21 54 50.7	+5.04	22 43.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.3	15″.3	15″.4	15″.5
Horizontal Parallax	1.4	1.4	1.4	1.5

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 32 36.52	+2.403	−21 54 50.7	+5.04	22 43.5
2	19 33 34.12	2.396	21 52 49.5	5.08	22 40.5
3	19 34 31.53	2.388	21 50 47.4	5.11	22 37.6
4	19 35 28.75	2.380	21 48 44.4	5.14	22 34.6
5	19 36 25.78	2.372	21 46 40.7	5.17	22 31.6
6	19 37 22.61	2.364	21 44 36.2	5.20	22 28.6
7	19 38 19.23	2.355	21 42 31.0	5.23	22 25.6
8	19 39 15.63	2.346	21 40 25.1	5.26	22 22.6
9	19 40 11.81	2.337	21 38 18.5	5.29	22 19.6
10	19 41 7.77	2.327	21 36 11.2	5.32	22 16.6
11	19 42 3.49	2.317	21 34 3.4	5.35	22 13.6
12	19 42 58.97	2.307	21 31 54.9	5.37	22 10.6
13	19 43 54.21	2.296	21 29 45.8	5.39	22 7.5
14	19 44 49.20	2.285	21 27 36.2	5.41	22 4.5
15	19 45 43.94	2.274	21 25 26.1	5.43	22 1.5
16	19 46 38.44	2.263	21 23 15.5	5.45	21 58.5
17	19 47 32.67	2.252	21 21 4.5	5.47	21 55.5
18	19 48 26.63	2.241	21 18 53.1	5.48	21 52.5
19	19 49 20.32	2.229	21 16 41.3	5.50	21 49.4
20	19 50 13.72	2.217	21 14 29.2	5.52	21 46.4
21	19 51 6.84	2.205	21 12 16.7	5.53	21 43.4
22	19 51 59.67	2.193	21 10 3.9	5.54	21 40.3
23	19 52 52.20	2.181	21 7 50.8	5.55	21 37.3
24	19 53 44.44	2.168	21 5 37.5	5.56	21 34.2
25	19 54 36.37	2.155	21 3 24.1	5.57	21 31.1
26	19 55 27.99	2.142	21 1 10.5	5.57	21 28.0
27	19 56 19.28	2.129	20 58 56.8	5.58	21 24.9
28	19 57 10.24	2.116	20 56 43.0	5.58	21 21.8
29	19 58 0.87	2.102	20 54 29.2	5.57	21 18.7
30	19 58 51.16	2.087	20 52 15.5	5.57	21 15.6
31	19 59 41.10	2.072	20 50 1.8	5.57	21 12.5
32	20 0 30.69	+2.057	−20 47 48.2	+5.56	21 9.4

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	15″.5	15″.7	15″.9	16″.2
Horizontal Parallax	1.5	1.5	1.5	1.5

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	19 58 0.87	+2.102	−20 54 29.2	+5.57	21 18.7	1	20 20 51.11	+1.541	−19 48 51.4	+4.75	19 39.3
2	19 58 51.16	2.087	20 52 15.5	5.57	21 15.6	2	20 21 27.83	1.519	19 46 58.3	4.69	19 36.0
3	19 59 41.10	2.072	20 50 1.8	5.57	21 12.5	3	20 22 4.02	1.496	19 45 6.6	4.63	19 32.6
4	20 0 30.69	2.057	20 47 48.2	5.56	21 9.4	4	20 22 39.67	1.473	19 43 16.3	4.57	19 29.3
5	20 1 19.91	2.042	20 45 34.7	5.56	21 6.3	5	20 23 14.76	1.450	19 41 27.4	4.51	19 25.9
6	20 2 8.77	2.027	20 43 21.4	5.55	21 3.1	6	20 23 49.30	1.427	19 39 40.1	4.45	19 22.5
7	20 2 57.25	2.011	20 41 8.4	5.54	21 0.0	7	20 24 23.27	1.404	19 37 54.3	4.38	19 19.1
8	20 3 45.35	1.995	20 38 55.7	5.53	20 56.8	8	20 24 56.67	1.380	19 36 10.2	4.31	19 15.7
9	20 4 33.06	1.979	20 36 43.2	5.52	20 53.7	9	20 25 29.49	1.356	19 34 27.7	4.24	19 12.3
10	20 5 20.37	1.963	20 34 31.0	5.50	20 50.5	10	20 26 1.74	1.332	19 32 46.8	4.17	19 8.9
11	20 6 7.29	1.947	20 32 19.2	5.48	20 47.4	11	20 26 33.41	1.307	19 31 7.6	4.10	19 5.5
12	20 6 53.81	1.930	20 30 7.9	5.46	20 44.2	12	20 27 4.48	1.282	19 29 30.2	4.03	19 2.1
13	20 7 39.92	1.913	20 27 57.1	5.44	20 41.0	13	20 27 34.96	1.257	19 27 54.6	3.96	18 58.7
14	20 8 25.62	1.896	20 25 46.7	5.42	20 37.8	14	20 28 4.84	1.232	19 26 20.7	3.88	18 55.3
15	20 9 10.90	1.878	20 23 36.9	5.39	20 34.6	15	20 28 34.11	1.207	19 24 48.7	3.80	18 51.8
16	20 9 55.76	1.860	20 21 27.7	5.36	20 31.4	16	20 29 2.77	1.181	19 23 18.6	3.72	18 48.4
17	20 10 40.19	1.842	20 19 19.1	5.33	20 28.2	17	20 29 30.81	1.155	19 21 50.5	3.64	18 45.0
18	20 11 24.19	1.824	20 17 11.1	5.30	20 25.0	18	20 29 58.23	1.129	19 20 24.3	3.56	18 41.5
19	20 12 7.74	1.806	20 15 3.9	5.27	20 21.8	19	20 30 25.02	1.103	19 19 0.0	3.47	18 38.0
20	20 12 50.85	1.787	20 12 57.4	5.24	20 18.6	20	20 30 51.18	1.077	19 17 37.9	3.38	18 34.5
21	20 13 33.51	1.768	20 10 51.6	5.21	20 15.4	21	20 31 16.70	1.050	19 16 17.9	3.29	18 31.0
22	20 14 15.71	1.749	20 8 46.6	5.18	20 12.1	22	20 31 41.58	1.023	19 14 59.9	3.20	18 27.4
23	20 14 57.45	1.729	20 6 42.5	5.14	20 8.9	23	20 32 5.80	0.996	19 13 44.1	3.10	18 23.8
24	20 15 38.71	1.709	20 4 39.3	5.10	20 5.6	24	20 32 29.36	0.968	19 12 30.6	3.01	18 20.3
25	20 16 19.50	1.689	20 2 37.1	5.07	20 2.4	25	20 32 52.25	0.940	19 11 19.3	2.92	18 16.7
26	20 16 59.81	1.669	20 0 35.8	5.03	19 59.1	26	20 33 14.47	0.912	19 10 10.3	2.82	18 13.1
27	20 17 39.63	1.648	19 58 35.6	4.99	19 55.8	27	20 33 36.01	0.883	19 9 3.7	2.72	18 9.5
28	20 18 18.96	1.627	19 56 36.5	4.95	19 52.5	28	20 33 56.87	0.854	19 7 59.5	2.62	18 5.9
29	20 18 57.78	1.606	19 54 38.5	4.90	19 49.2	29	20 34 17.03	0.826	19 6 57.7	2.52	18 2.3
30	20 19 36.08	1.585	19 52 41.6	4.85	19 45.9	30	20 34 36.49	0.796	19 5 58.3	2.42	17 58.7
31	20 20 13.86	1.563	19 50 45.9	4.80	19 42.6	31	20 34 55.25	0.767	19 5 1.4	2.32	17 55.1
32	20 20 51.11	+1.541	−19 48 51.4	+4.75	19 39.3	32	20 35 13.31	+0.737	−19 4 7.1	+2.22	17 51.5

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	16″.1	16″.5	16″.9	17″.3	Polar Semidiameter	17″.4	17″.9	18″.4	19″.0
Horizontal Parallax	1.5	1.6	1.6	1.6	Horizontal Parallax	1.6	1.7	1.7	1.8

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 34 55.25	+0.767	−19 5 1.4	+2.32	17 55.1
2	20 35 13.31	0.737	19 4 7.1	2.22	17 51.5
3	20 35 30.65	0.707	19 3 15.3	2.11	17 47.9
4	20 35 47.28	0.677	19 2 26.1	2.00	17 44.2
5	20 36 3.19	0.647	19 1 39.5	1.89	17 40.5
6	20 36 18.38	0.617	19 0 55.5	1.78	17 36.8
7	20 36 32.83	0.587	19 0 14.3	1.67	17 33.1
8	20 36 46.55	0.556	18 59 35.7	1.56	17 29.4
9	20 36 59.53	0.525	18 58 59.8	1.45	17 25.6
10	20 37 11.76	0.494	18 58 26.7	1.33	17 21.9
11	20 37 23.25	0.463	18 57 56.3	1.21	17 18.1
12	20 37 33.99	0.432	18 57 28.7	1.10	17 14.3
13	20 37 43.98	0.401	18 57 3.9	0.98	17 10.5
14	20 37 53.22	0.370	18 56 41.9	0.86	17 6.7
15	20 38 1.71	0.339	18 56 22.7	0.74	17 2.9
16	20 38 9.45	0.307	18 56 6.3	0.62	16 59.1
17	20 38 16.43	0.275	18 55 52.8	0.50	16 55.3
18	20 38 22.65	0.243	18 55 42.1	0.38	16 51.5
19	20 38 28.10	0.211	18 55 34.3	0.26	16 47.7
20	20 38 32.78	0.179	18 55 29.4	0.14	16 43.8
21	20 38 36.69	0.147	18 55 27.4	+0.02	16 39.9
22	20 38 39.82	0.115	18 55 28.3	−0.10	16 36.0
23	20 38 42.18	0.083	18 55 32.1	0.23	16 32.1
24	20 38 43.76	0.050	18 55 38.8	0.35	16 28.2
25	20 38 44.56	+0.017	18 55 48.6	0.47	16 24.3
26	20 38 44.58	−0.016	18 56 1.3	0.60	16 20.4
27	20 38 43.81	0.049	18 56 17.0	0.72	16 16.5
28	20 38 42.26	0.082	18 56 35.7	0.84	16 12.5
29	20 38 39.92	0.115	18 56 57.4	0.96	16 8.5
30	20 38 36.79	0.147	18 57 22.0	1.08	16 4.5
31	20 38 32.89	0.179	18 57 49.5	1.20	16 0.5
32	20 38 28.21	−0.212	−18 58 19.9	−1.32	15 56.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	19″.0	19″.6	20″.3	20″.9
Horizontal Parallax	1.8	1.8	1.9	2.0

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 38 28.21	−0.212	−18 58 19.9	−1.32	15 56.5
2	20 38 22.76	0.244	18 58 53.2	1.44	15 52.5
3	20 38 16.53	0.276	18 59 29.4	1.56	15 48.5
4	20 38 9.52	0.308	19 0 8.4	1.68	15 44.5
5	20 38 1.75	0.340	19 0 50.2	1.80	15 40.4
6	20 37 53.22	0.372	19 1 34.8	1.92	15 36.3
7	20 37 43.93	0.403	19 2 22.2	2.04	15 32.2
8	20 37 33.88	0.434	19 3 12.4	2.15	15 28.1
9	20 37 23.08	0.465	19 4 5.3	2.26	15 24.0
10	20 37 11.55	0.496	19 5 0.8	2.37	15 19.8
11	20 36 59.28	0.527	19 5 59.0	2.48	15 15.7
12	20 36 46.27	0.557	19 6 59.8	2.59	15 11.5
13	20 36 32.54	0.587	19 8 3.2	2.70	15 7.3
14	20 36 18.10	0.617	19 9 9.2	2.80	15 3.1
15	20 36 2.95	0.646	19 10 17.6	2.90	14 58.9
16	20 35 47.10	0.675	19 11 28.5	3.00	14 54.7
17	20 35 30.56	0.704	19 12 41.7	3.10	14 50.5
18	20 35 13.33	0.732	19 13 57.4	3.20	14 46.3
19	20 34 55.42	0.760	19 15 15.4	3.30	14 42.0
20	20 34 36.83	0.788	19 16 35.6	3.39	14 37.8
21	20 34 17.58	0.815	19 17 58.0	3.48	14 33.5
22	20 33 57.68	0.842	19 19 22.6	3.57	14 29.2
23	20 33 37.14	0.868	19 20 49.2	3.66	14 24.9
24	20 33 15.96	0.894	19 22 17.9	3.74	14 20.6
25	20 32 54.17	0.920	19 23 48.7	3.82	14 16.3
26	20 32 31.78	0.945	19 25 21.4	3.90	14 12.0
27	20 32 8.80	0.969	19 26 55.9	3.98	14 7.7
28	20 31 45.24	0.993	19 28 32.2	4.05	14 3.4
29	20 31 21.10	1.017	19 30 10.3	4.12	13 59.1
30	20 30 56.41	1.040	19 31 50.1	4.19	13 54.7
31	20 30 31.20	1.062	19 33 31.4	4.25	13 50.3
32	20 30 5.48	−1.083	−19 35 14.2	−4.31	13 46.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	20″.9	21″.5	21″.1	22″.5
Horizontal Parallax	2.0	2.0	2.1	2.1

NOTE.—North declinations are marked +, south declinations −.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 30 31.20	−1.062	−19 33 31.4	−4.25	13 50.3
2	20 30 5.48	1.083	19 35 14.2	4.31	13 46.0
3	20 29 39.26	1.103	19 36 58.3	4.37	13 41.6
4	20 29 12.57	1.122	19 38 43.7	4.42	13 37.2
5	20 28 45.42	1.141	19 40 30.4	4.47	13 32.8
6	20 28 17.82	1.159	19 42 18.2	4.52	13 28.4
7	20 27 49.80	1.176	19 44 7.1	4.56	13 24.0
8	20 27 21.37	1.192	19 45 56.9	4.60	13 19.6
9	20 26 52.56	1.207	19 47 47.6	4.63	13 15.2
10	20 26 23.39	1.222	19 49 39.1	4.66	13 10.8
11	20 25 53.86	1.236	19 51 31.3	4.69	13 6.4
12	20 25 24.01	1.250	19 53 24.1	4.71	13 2.0
13	20 24 53.85	1.263	19 55 17.5	4.73	12 57.6
14	20 24 23.41	1.275	19 57 11.4	4.75	12 53.2
15	20 23 52.69	1.285	19 59 5.6	4.77	12 48.7
16	20 23 21.74	1.294	20 1 0.2	4.78	12 44.3
17	20 22 50.57	1.302	20 2 55.0	4.79	12 39.9
18	20 22 19.19	1.310	20 4 49.9	4.80	12 35.4
19	20 21 47.63	1.317	20 6 45.0	4.80	12 30.9
20	20 21 15.91	1.324	20 8 40.1	4.80	12 26.4
21	20 20 44.05	1.330	20 10 35.1	4.79	12 22.0
22	20 20 12.08	1.334	20 12 30.0	4.78	12 17.5
23	20 19 40.02	1.337	20 14 24.5	4.76	12 13.0
24	20 19 7.89	1.339	20 16 18.7	4.74	12 8.6
25	20 18 35.71	1.341	20 18 12.5	4.72	12 4.1
26	20 18 3.51	1.342	20 20 5.8	4.70	11 59.7
27	20 17 31.32	1.341	20 21 58.5	4.68	11 55.2
28	20 16 59.16	1.339	20 23 50.6	4.65	11 50.8
29	20 16 27.05	1.336	20 25 42.0	4.62	11 46.3
30	20 15 55.01	1.332	20 27 32.5	4.58	11 41.9
31	20 15 23.07	1.328	20 29 22.1	4.54	11 37.4
32	20 14 51.25	−1.323	−20 31 10.7	−4.50	11 33.0

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	22″.5	22″.8	23″.0	23″.0
Horizontal Parallax	2.1	2.1	2.2	2.2

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 14 51.25	−1.323	−20 31 10.7	− 4.50	11 33.0
2	20 14 19.59	1.316	20 32 58.2	4.45	11 28.5
3	20 13 48.11	1.308	20 34 44.6	4.40	11 24.0
4	20 13 16.83	1.299	20 36 29.8	4.35	11 19.6
5	20 12 45.76	1.289	20 38 13.8	4.30	11 15.2
6	20 12 14.93	1.279	20 39 56.4	4.25	11 10.7
7	20 11 44.38	1.268	20 41 37.6	4.19	11 6.3
8	20 11 14.12	1.256	20 43 17.4	4.13	11 1.9
9	20 10 44.16	1.243	20 44 55.7	4.07	10 57.5
10	20 10 14.54	1.228	20 46 32.4	4.00	10 53.0
11	20 9 45.26	1.212	20 48 7.4	3.93	10 48.6
12	20 9 16.36	1.196	20 49 40.9	3.86	10 44.1
13	20 8 47.84	1.179	20 51 12.7	3.79	10 39.7
14	20 8 19.73	1.162	20 52 42.8	3.72	10 35.3
15	20 7 52.05	1.144	20 54 11.0	3.64	10 30.9
16	20 7 24.82	1.125	20 55 37.4	3.56	10 26.5
17	20 6 58.06	1.105	20 57 2.0	3.48	10 22.1
18	20 6 31.77	1.084	20 58 24.7	3.40	10 17.7
19	20 6 5.99	1.063	20 59 45.6	3.32	10 13.3
20	20 5 40.73	1.041	21 1 4.4	3.24	10 9.0
21	20 5 16.01	1.018	21 2 21.1	3.15	10 4.7
22	20 4 51.84	0.995	21 3 35.8	3.07	10 0.4
23	20 4 28.24	0.971	21 4 48.5	2.98	9 56.1
24	20 4 5.22	0.946	21 5 59.1	2.89	9 51.8
25	20 3 42.81	0.920	21 7 7.6	2.80	9 47.5
26	20 3 21.03	0.894	21 8 13.8	2.71	9 43.2
27	20 2 59.88	0.867	21 9 17.9	2.62	9 38.9
28	20 2 39.39	0.840	21 10 19.8	2.53	9 34.6
29	20 2 19.56	0.812	21 11 19.5	2.44	9 30.4
30	20 2 0.41	0.783	21 12 16.9	2.35	9 26.1
31	20 1 41.95	0.754	21 13 12.0	2.25	9 21.9
32	20 1 24.20	−0.725	−21 14 4.7	−2.15	9 17.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	23″.0	22″.8	22″.4	22″.0
Horizontal Parallax	2.2	2.1	2.1	2.1

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	20 1 24.20	−0.725	−21 14 4.7	−2.15	9 17.7
2	20 1 7.16	0.695	21 14 55.1	2.05	9 13.5
3	20 0 50.84	0.665	21 15 43.2	1.95	9 9.3
4	20 0 35.26	0.634	21 16 29.0	1.85	9 5.1
5	20 0 20.43	0.603	21 17 12.4	1.76	9 1.0
6	20 0 6.35	0.571	21 17 53.4	1.66	8 56.8
7	19 59 53.03	0.539	21 18 32.1	1.56	8 52.6
8	19 59 40.48	0.507	21 19 8.4	1.46	8 48.5
9	19 59 28.70	0.475	21 19 42.3	1.36	8 44.4
10	19 59 17.70	0.442	21 20 13.9	1.26	8 40.3
11	19 59 7.48	0.409	21 20 43.1	1.17	8 36.2
12	19 58 58.05	0.376	21 21 10.0	1.07	8 32.1
13	19 58 49.41	0.343	21 21 34.6	0.97	8 28.0
14	19 58 41.57	0.310	21 21 56.8	0.87	8 24.0
15	19 58 34.53	0.277	21 22 16.6	0.78	8 20.0
16	19 58 28.30	0.243	21 22 34.0	0.68	8 16.0
17	19 58 22.88	0.209	21 22 49.1	0.58	8 11.9
18	19 58 18.26	0.175	21 23 1.8	0.48	8 7.9
19	19 58 14.46	0.141	21 23 12.1	0.38	8 3.9
20	19 58 11.49	0.107	21 23 20.0	0.28	8 0.0
21	19 58 9.35	0.072	21 23 25.5	0.18	7 56.0
22	19 58 8.03	0.038	21 23 28.7	−0.08	7 52.0
23	19 58 7.53	−0.003	21 23 29.6	+0.02	7 48.0
24	19 58 7.86	+0.031	21 23 28.0	0.12	7 44.0
25	19 58 9.02	0.066	21 23 23.9	0.22	7 40.1
26	19 58 11.00	0.100	21 23 17.5	0.32	7 36.2
27	19 58 13.82	0.135	21 23 8.7	0.42	7 32.3
28	19 58 17.46	0.170	21 22 57.5	0.52	7 28.4
29	19 58 21.93	0.204	21 22 43.9	0.62	7 24.6
30	19 58 27.23	0.238	21 22 28.0	0.71	7 20.8
31	19 58 33.35	0.272	21 22 9.7	0.81	7 17.0
32	19 58 40.29	+0.306	−21 21 49.0	+0.91	7 13.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	21″.9	21″.4	20″.8	20″.1
Horizontal Parallax	2.1	2.0	2.0	1.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 58 33.35	+0.272	−21 22 9.7	+0.81	7 17.0
2	19 58 40.29	0.306	21 21 49.0	0.91	7 13.2
3	19 58 48.05	0.340	21 21 25.9	1.00	7 9.4
4	19 58 56.64	0.374	21 21 0.5	1.10	7 5.6
5	19 59 6.03	0.408	21 20 32.8	1.20	7 1.8
6	19 59 16.22	0.441	21 20 2.7	1.30	6 58.1
7	19 59 27.21	0.474	21 19 30.3	1.40	6 54.4
8	19 59 38.99	0.507	21 18 55.6	1.50	6 50.7
9	19 59 51.56	0.540	21 18 18.6	1.60	6 47.0
10	20 0 4.91	0.573	21 17 39.2	1.70	6 43.3
11	20 0 19.04	0.605	21 16 57.5	1.79	6 39.6
12	20 0 33.95	0.637	21 16 13.5	1.89	6 35.9
13	20 0 49.62	0.669	21 15 27.2	1.99	6 32.2
14	20 1 6.06	0.701	21 14 38.7	2.08	6 28.5
15	20 1 23.26	0.733	21 13 47.9	2.17	6 24.9
16	20 1 41.21	0.764	21 12 54.8	2.26	6 21.3
17	20 1 59.91	0.795	21 11 59.4	2.36	6 17.7
18	20 2 19.35	0.826	21 11 1.7	2.45	6 14.1
19	20 2 39.53	0.856	21 10 1.7	2.55	6 10.5
20	20 3 0.45	0.886	21 8 59.4	2.64	6 6.9
21	20 3 22.09	0.916	21 7 54.8	2.74	6 3.3
22	20 3 44.45	0.946	21 6 47.9	2.83	5 59.7
23	20 4 7.53	0.976	21 5 38.7	2.93	5 56.2
24	20 4 31.32	1.006	21 4 27.3	3.02	5 52.7
25	20 4 55.81	1.035	21 3 13.6	3.12	5 49.2
26	20 5 21.00	1.064	21 1 57.6	3.21	5 45.7
27	20 5 46.87	1.092	21 0 39.3	3.31	5 42.2
28	20 6 13.43	1.120	20 59 18.6	3.40	5 38.7
29	20 6 40.66	1.148	20 57 55.6	3.50	5 35.2
30	20 7 8.56	1.176	20 56 30.4	3.59	5 31.7
31	20 7 37.11	1.203	20 55 3.0	3.69	5 28.2
32	20 8 6.31	+1.230	−20 53 33.3	+3.79	5 24.7

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	20″.1	19″.5	18″.9	18″.4
Horizontal Parallax	1.9	1.8	1.8	1.7

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 8 6.31	+1.230	−20 53 33.3	+3.79	5 24.7	1	20 27 4.12	+1.882	−19 51 33.4	+6.53	3 45.8
2	20 8 36.14	1.256	20 52 1.3	3.89	5 21.2	2	20 27 49.49	1.898	19 48 55.6	6.62	3 42.6
3	20 9 6.61	1.282	20 50 27.1	3.98	5 17.8	3	20 28 35.26	1.914	19 46 15.8	6.71	3 39.5
4	20 9 37.71	1.308	20 48 50.7	4.07	5 14.4	4	20 29 21.41	1.930	19 43 33.9	6.80	3 36.3
5	20 10 9.42	1.334	20 47 12.0	4.16	5 11.0	5	20 30 7.94	1.946	19 40 50.0	6.88	3 33.1
6	20 10 41.74	1.359	20 45 31.2	4.25	5 7.6	6	20 30 54.84	1.961	19 38 4.0	6.96	3 30.0
7	20 11 14.65	1.384	20 43 48.1	4.35	5 4.2	7	20 31 42.09	1.976	19 35 15.9	7.05	3 26.8
8	20 11 49.15	1.408	20 42 2.8	4.44	5 0.8	8	20 32 29.70	1.991	19 32 25.9	7.14	3 23.6
9	20 12 22.24	1.432	20 40 15.2	4.53	4 57.5	9	20 33 17.66	2.005	19 29 33.8	7.22	3 20.5
10	20 12 56.90	1.456	20 38 25.5	4.62	4 54.1	10	20 34 5.96	2.019	19 26 39.6	7.30	3 17.3
11	20 13 32.12	1.479	20 36 33.6	4.71	4 50.8	11	20 34 54.59	2.033	19 23 43.4	7.38	3 14.2
12	20 14 7.90	1.502	20 34 39.4	4.80	4 47.5	12	20 35 43.55	2.047	19 20 45.3	7.47	3 11.0
13	20 14 44.23	1.525	20 32 43.0	4.89	4 44.2	13	20 36 32.83	2.060	19 17 45.1	7.56	3 7.9
14	20 15 21.10	1.548	20 30 44.5	4.99	4 40.9	14	20 37 22.42	2.073	19 14 42.8	7.64	3 4.8
15	20 15 58.52	1.570	20 28 43.7	5.08	4 37.6	15	20 38 12.32	2.086	19 11 38.6	7.72	3 1.7
16	20 16 36.46	1.592	20 26 40.7	5.17	4 34.3	16	20 39 2.53	2.098	19 8 32.4	7.80	2 58.6
17	20 17 14.93	1.614	20 24 35.6	5.27	4 31.0	17	20 39 53.03	2.110	19 5 24.2	7.89	2 55.5
18	20 17 53.91	1.635	20 22 28.3	5.36	4 27.7	18	20 40 43.81	2.122	19 2 14.0	7.97	2 52.4
19	20 18 33.40	1.656	20 20 18.7	5.45	4 24.4	19	20 41 34.87	2.133	18 59 1.8	8.05	2 49.4
20	20 19 13.40	1.677	20 18 6.9	5.54	4 21.1	20	20 42 26.20	2.144	18 55 47.7	8.13	2 46.3
21	20 19 53.89	1.697	20 15 52.9	5.63	4 17.9	21	20 43 17.80	2.155	18 52 31.7	8.21	2 43.2
22	20 20 34.87	1.717	20 13 36.7	5.72	4 14.6	22	20 44 9.66	2.166	18 49 13.7	8.29	2 40.1
23	20 21 16.32	1.737	20 11 18.4	5.81	4 11.4	23	20 45 1.78	2.176	18 45 53.9	8.37	2 37.1
24	20 21 58.24	1.757	20 8 57.8	5.90	4 8.2	24	20 45 54.14	2.186	18 42 32.2	8.45	2 34.0
25	20 22 40.62	1.777	20 6 35.0	5.99	4 5.0	25	20 46 46.74	2.196	18 39 8.6	8.53	2 31.0
26	20 23 23.45	1.796	20 4 10.1	6.08	4 1.8	26	20 47 39.57	2.206	18 35 43.2	8.60	2 27.9
27	20 24 6.73	1.814	20 1 43.1	6.17	3 58.6	27	20 48 32.61	2.215	18 32 15.9	8.68	2 24.9
28	20 24 50.45	1.831	19 59 13.9	6.26	3 55.4	28	20 49 25.87	2.224	18 28 46.8	8.76	2 21.8
29	20 25 34.59	1.848	19 56 42.5	6.35	3 52.2	29	20 50 19.34	2.232	18 25 16.0	8.83	2 18.8
30	20 26 19.15	1.865	19 54 9.0	6.44	3 49.0	30	20 51 13.01	2.240	18 21 43.4	8.90	2 15.7
31	20 27 4.12	1.882	19 51 33.4	6.53	3 45.8	31	20 52 6.87	2.248	18 18 9.0	8.97	2 12.7
32	20 27 49.49	+1.898	−19 48 55.6	+6.62	3 42.6	32	20 53 0.92	+2.256	−18 14 42.8	+9.04	2 9.6

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	18″.3	17″.8	17″.3	16″.9	Polar Semidiameter	16″.9	16″.5	16″.2	16″.0
Horizontal Parallax	1.7	1.7	1.6	1.6	Horizontal Parallax	1.6	1.6	1.5	1.5

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 9 24.73	+0.685	−7 37 47.8	+4.69	4 24.7
2	23 9 41.31	0.697	7 35 54.6	4.76	4 21.0
3	23 9 58.20	0.710	7 33 59.5	4.83	4 17.4
4	23 10 15.38	0.722	7 32 2.5	4.91	4 13.8
5	23 10 32.86	0.734	7 30 3.9	4.98	4 10.1
6	23 10 50.63	0.746	7 28 3.6	5.05	4 6.5
7	23 11 8.69	0.758	7 26 1.5	5.12	4 2.9
8	23 11 27.03	0.770	7 23 57.8	5.20	3 59.3
9	23 11 45.64	0.782	7 21 52.3	5.27	3 55.6
10	23 12 4.53	0.793	7 19 45.3	5.33	3 52.0
11	23 12 23.68	0.804	7 17 36.6	5.40	3 48.4
12	23 12 43.10	0.814	7 15 26.5	5.46	3 44.8
13	23 13 2.76	0.825	7 13 14.7	5.53	3 42.1
14	23 13 22.69	0.835	7 11 1.4	5.59	3 37.6
15	23 13 42.85	0.846	7 8 46.7	5.65	3 34.0
16	23 14 3.27	0.856	7 6 30.5	5.70	3 30.4
17	23 14 23.93	0.866	7 4 13.0	5.76	3 26.8
18	23 14 44.83	0.876	7 1 54.0	5.82	3 23.2
19	23 15 5.96	0.886	6 59 33.7	5.88	3 19.6
20	23 15 27.32	0.895	6 57 11.9	5.94	3 16.1
21	23 15 48.90	0.904	6 54 48.8	5.99	3 12.5
22	23 16 10.70	0.913	6 52 24.4	6.04	3 8.9
23	23 16 32.73	0.922	6 49 58.8	6.10	3 5.3
24	23 16 54.96	0.930	6 47 31.9	6.15	3 1.8
25	23 17 17.40	0.939	6 45 3.7	6.20	2 58.2
26	23 17 40.04	0.948	6 42 34.4	6.25	2 54.6
27	23 18 2.90	0.956	6 40 3.9	6.30	2 51.1
28	23 18 25.95	0.964	6 37 32.1	6.35	2 47.5
29	23 18 49.20	0.972	6 34 59.3	6.40	2 44.0
30	23 19 12.63	0.980	6 32 25.3	6.44	2 40.4
31	23 19 36.24	0 988	6 29 50.2	6.48	2 36.9
32	23 20 0.03	+0.996	−6 27 14.1	+6.52	2 33.4

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.8	7″.7	7″.6	7″.5
Horizontal Parallax	0.9	0.9	0.9	0.8

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 20 0.03	+0.996	−6 27 14.1	+6.52	2 33.4
2	23 20 24.01	1.003	6 24 37.0	6.57	2 29.8
3	23 20 48.14	1.010	6 21 58.9	6.61	2 26.3
4	23 21 12.45	1.017	6 19 19.8	6.65	2 22.8
5	23 21 36.91	1.023	6 16 39.8	6.68	2 19.3
6	23 22 1.54	1.030	6 13 59.0	6.72	2 15.7
7	23 22 26.32	1.036	6 11 17.3	6.75	2 12.2
8	23 22 51.24	1.042	6 8 34.8	6.79	2 8.7
9	23 23 16.30	1.047	6 5 51.4	6.82	2 5.2
10	23 23 41.50	1.053	6 3 7.3	6.85	2 1.6
11	23 24 6.83	1.058	6 0 22.4	6.88	1 58.1
12	23 24 32.29	1.064	5 57 36.9	6.91	1 54.6
13	23 24 57.87	1.069	5 54 50.6	6.94	1 51.1
14	23 25 23.58	1.074	5 52 3.8	6.97	1 47.6
15	23 25 49.41	1.078	5 49 16.3	7.00	1 44.1
16	23 26 15.34	1.083	5 46 28.1	7.02	1 40.6
17	23 26 41.38	1.087	5 43 39.3	7.05	1 37.1
18	23 27 7.52	1.091	5 40 50.0	7.07	1 33.6
19	23 27 33.76	1.095	5 38 0.1	7.09	1 30.1
20	23 28 0.09	1.099	5 35 9.8	7.11	1 26.6
21	23 28 26.52	1.103	5 32 19.0	7.13	1 23.1
22	23 28 53.03	1.107	5 29 27.7	7.15	1 19.6
23	23 29 19.63	1.110	5 26 36.0	7.17	1 16.1
24	23 29 46.31	1.113	5 23 43.9	7.19	1 12.6
25	23 30 13.06	1.116	5 20 51.4	7.20	1 9.2
26	23 30 39.89	1.119	5 17 58.6	7.21	1 5.7
27	23 31 6.79	1.122	5 15 5.5	7.22	1 2.2
28	23 31 33.74	1.124	5 12 12.0	7.24	0 58.7
29	23 32 0.76	1.127	5 9 18.3	7.25	0 55.2
30	23 32 27.83	1.129	5 6 24.4	7.26	0 51.7
31	23 32 54.95	1.131	5 3 30.2	7.26	0 48.2
32	23 33 22.11	+1.133	−5 0 35.9	+7.27	0 44.8

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.5	7″.5	7″.4	7″.4
Horizontal Parallax	0.8	0.8	0.8	0.8

Note.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 32 0.76	+1.127	−5 9 18.3	+7.25	0 55.2	1	23 46 3.76	+1.113	−3 40 1.0	+6.98	23 3.8
2	23 32 27.83	1.129	5 6 24.4	7.26	0 51.7	2	23 46 30.42	1.110	3 37 13.8	6.96	23 0.3
3	23 32 54.95	1.131	5 3 30.2	7.26	0 48.2	3	23 46 57.02	1.107	3 34 27.2	6.93	22 56.8
4	23 33 22.11	1.133	5 0 35.9	7.27	0 44.8	4	23 47 23.53	1.103	3 31 41.3	6.90	22 53.3
5	23 33 49.31	1.135	4 57 41.5	7.27	0 41.3	5	23 47 49.96	1.100	3 28 56.1	6.87	22 49.8
6	23 34 16.55	1.136	4 54 47.0	7.28	0 37.8	6	23 48 16.30	1.096	3 26 11.7	6.84	22 46.3
7	23 34 43.83	1.137	4 51 52.4	7.28	0 34.3	7	23 48 42.54	1.092	3 23 28.0	6.81	22 42.8
8	23 35 11.13	1.138	4 48 57.7	7.28	0 30.8	8	23 49 8.68	1.087	3 20 45.1	6.77	22 39.3
9	23 35 38.44	1.138	4 46 3.0	7.28	0 27.4	9	23 49 34.71	1.083	3 18 3.1	6.74	22 35.8
10	23 36 5.78	1.139	4 43 8.3	7.28	0 23.9	10	23 50 0.65	1.078	3 15 21.8	6.70	22 32.3
11	23 36 33.14	1.140	4 40 13.6	7.28	0 20.4	11	23 50 26.47	1.074	3 12 41.4	6.67	22 28.8
12	23 37 0.49	1.140	4 37 19.0	7.27	0 16.9	12	23 50 52.18	1.069	3 10 1.9	6.63	22 25.3
13	23 37 27.86	1.140	4 34 24.4	7.27	0 13.4	13	23 51 17.77	1.064	3 7 23.4	6.59	22 21.8
14	23 37 55.23	1.140	4 31 30.1	7.26	0 10.0	14	23 51 43.25	1.059	3 4 45.8	6.55	22 18.3
15	23 38 22.59	1.140	4 28 35.9	7.25	0 6.5	15	23 52 8.60	1.054	3 2 9.1	6.51	22 14.8
16	23 38 49.94	1.139	4 25 41.9	7.25	0 3.0 23 59.5	16	23 52 33.83	1.048	2 59 33.4	6.47	22 11.3
17	23 39 17.29	1.138	4 22 48.0	7.24	23 56.0	17	23 52 58.92	1.043	2 56 58.7	6.43	22 7.8
18	23 39 44.62	1.138	4 19 54.5	7.23	23 52.6	18	23 53 23.88	1.037	2 54 25.0	6.38	22 4.2
19	23 40 11.93	1.137	4 17 1.2	7.21	23 49.1	19	23 53 48.70	1.031	2 51 52.4	6.34	22 0.7
20	23 40 39.23	1.136	4 14 8.1	7.20	23 45.6	20	23 54 13.38	1.025	2 49 20.8	6.29	21 57.2
21	23 41 6.49	1.135	4 11 15.3	7.19	23 42.1	21	23 54 37.92	1.019	2 46 50.3	6.25	21 53.7
22	23 41 33.74	1.134	4 8 22.8	7.18	23 38.7	22	23 55 2.31	1.013	2 44 20.9	6.20	21 50.2
23	23 42 0.95	1.133	4 5 30.7	7.16	23 35.2	23	23 55 26.54	1.006	2 41 52.8	6.15	21 46.6
24	23 42 28.13	1.131	4 2 38.9	7.15	23 31.7	24	23 55 50.63	0.999	2 39 25.8	6.10	21 43.1
25	23 42 55.27	1.129	3 59 47.5	7.13	23 28.2	25	23 56 14.55	0.993	2 36 59.9	6.05	21 39.6
26	23 43 22.36	1.127	3 56 56.5	7.11	23 24.7	26	23 56 38.31	0.986	2 34 35.4	6.00	21 36.0
27	23 43 49.40	1.125	3 54 6.0	7.09	23 21.2	27	23 57 1.90	0.979	2 32 12.0	5.95	21 32.5
28	23 44 16.39	1.123	3 51 15.9	7.07	23 17.8	28	23 57 25.32	0.972	2 29 49.9	5.89	21 28.9
29	23 44 43.34	1.121	3 48 26.3	7.05	23 14.3	29	23 57 48.56	0.965	2 27 29.1	5.84	21 25.4
30	23 45 10.21	1.119	3 45 37.3	7.03	23 10.8	30	23 58 11.62	0.957	2 25 9.7	5.78	21 21.8
31	23 45 37.01	1.116	3 42 48.9	7.01	23 7.3	31	23 58 34.49	0.949	2 22 51.6	5.72	21 18.3
32	23 46 3.76	+1.113	−3 40 1.0	+6.98	23 3.8	32	23 58 57.18	+0.942	−2 20 34.9	+5.66	21 14.7

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.4	7″.4	7″.4	7″.4	Polar Semidiameter	7″.4	7″.4	7″.5	7″.6
Horizontal Parallax	0.8	0.8	0.8	0.8	Horizontal Parallax	0.8	0.8	0.8	0.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	23 58 34.49	+0.949	−2 22 51.6	+5.72	21 18.3
2	23 58 57.18	0.942	2 20 34.9	5.66	21 14.7
3	23 59 19.68	0.934	2 18 19.6	5.60	21 11.2
4	23 59 41.99	0.925	2 16 5.8	5.54	21 7.6
5	0 0 4.09	0.917	2 13 53.4	5.48	21 4.0
6	0 0 25.99	0.908	2 11 42.5	5.42	21 0.5
7	0 0 47.69	0.900	2 9 33.2	5.36	20 56.9
8	0 1 9.17	0.891	2 7 25.3	5.29	20 53.3
9	0 1 30.44	0.882	2 5 19.0	5.23	20 49.7
10	0 1 51.49	0.872	2 3 14.3	5.16	20 46.2
11	0 2 12.31	0.863	2 1 11.1	5.09	20 42.6
12	0 2 32.92	0.854	1 59 9.6	5.02	20 39.0
13	0 2 53.30	0.845	1 57 9.7	4.96	20 35.4
14	0 3 13.45	0.835	1 55 11.4	4.89	20 31.8
15	0 3 33.37	0.825	1 53 14.9	4.82	20 28.2
16	0 3 53.05	0.815	1 51 19.9	4.75	20 24.6
17	0 4 12.49	0.805	1 49 26.7	4.68	20 21.0
18	0 4 31.69	0.795	1 47 35.3	4.61	20 17.3
19	0 4 50.65	0.785	1 45 45.6	4.53	20 13.7
20	0 5 9.35	0.774	1 43 57.7	4.46	20 10.1
21	0 5 27.81	0.763	1 42 11.5	4.39	20 6.5
22	0 5 46.00	0.752	1 40 27.1	4.32	20 2.8
23	0 6 3.94	0.741	1 38 44.5	4.24	19 59.2
24	0 6 21.61	0.730	1 37 3.7	4.16	19 55.6
25	0 6 39.02	0.719	1 35 24.9	4.08	19 51.9
26	0 6 56.16	0.708	1 33 48.0	4.00	19 48.2
27	0 7 13.03	0.697	1 32 13.0	3.92	19 44.6
28	0 7 29.62	0.685	1 30 40.0	3.84	19 40.9
29	0 7 45.92	0.673	1 29 9.0	3.76	19 37.2
30	0 8 1.94	0.661	1 27 40.0	3.67	19 33.6
31	0 8 17.66	0.648	1 26 12.9	3.59	19 29.9
32	0 8 33.10	+0.636	−1 24 47.9	+3.50	19 26.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.6	7″.7	7″.8	7″.9
Horizontal Parallax	0.9	0.9	0.9	0.9

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	0 8 33.10	+0.636	−1 24 47.9	+3.50	19 26.2
2	0 8 48.24	0.624	1 23 24.9	3.42	19 22.5
3	0 9 3.08	0.612	1 22 4.1	3.33	19 18.8
4	0 9 17.63	0.600	1 20 45.2	3.24	19 15.1
5	0 9 31.86	0.587	1 19 28.5	3.15	19 11.5
6	0 9 45.80	0.574	1 18 13.9	3.07	19 7.8
7	0 9 59.42	0.561	1 17 1.5	2.98	19 4.0
8	0 10 12.72	0.548	1 15 51.1	2.89	19 0.3
9	0 10 25.72	0.535	1 14 43.0	2.80	18 56.6
10	0 10 38.40	0.522	1 13 36.9	2.71	18 52.9
11	0 10 50.76	0.508	1 12 33.0	2.62	18 49.1
12	0 11 2.80	0.495	1 11 31.4	2.53	18 45.4
13	0 11 14.52	0.481	1 10 31.9	2.43	18 41.7
14	0 11 25.91	0.468	1 9 34.7	2.34	18 37.9
15	0 11 36.97	0.454	1 8 39.7	2.24	16 34.1
16	0 11 47.70	0.440	1 7 46.9	2.15	18 30.4
17	0 11 58.10	0.426	1 6 56.4	2.05	18 26.6
18	0 12 8.16	0.412	1 6 8.1	1.96	18 22.8
19	0 12 17.88	0.398	1 5 22.1	1.87	18 19.1
20	0 12 27.26	0.384	1 4 38.4	1.77	18 15.3
21	0 12 36.31	0.369	1 3 57.1	1.67	18 11.5
22	0 12 45.00	0.355	1 3 18.1	1.58	18 7.7
23	0 12 53.35	0.340	1 2 41.3	1.48	18 3.9
24	0 13 1.35	0.326	1 2 6.9	1.38	18 0.1
25	0 13 8.99	0.311	1 1 34.8	1.28	17 56.3
26	0 13 16.28	0.296	1 1 5.1	1.18	17 52.5
27	0 13 23.21	0.281	1 0 37.8	1.08	17 48.7
28	0 13 29.77	0.266	1 0 13.0	0.98	17 44.8
29	0 13 35.98	0.251	0 59 50.6	0.88	17 41.0
30	0 13 41.83	0.236	0 59 30.5	0.78	17 37.2
31	0 13 47.31	0.221	0 59 12.8	0.68	17 33.3
32	0 13 52.42	+0.206	−0 58 57.6	+0.58	17 29.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	7″.9	8″.0	8″.2	8″.3
Horizontal Parallax	0.9	0.9	0.9	0.9

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 13 47.31	+0.221	−0 59 12.8	+0.68	17 33.3
2	0 13 52.42	0.206	0 58 57.6	0.58	17 29.5
3	0 13 57.17	0.190	0 58 44.6	0.48	17 25.6
4	0 14 1.56	0.175	0 58 34.2	0.38	17 21.7
5	0 14 5.57	0.159	0 58 26.2	0.28	17 17.9
6	0 14 9.22	0.144	0 58 20.6	0.18	17 14.0
7	0 14 12.49	0.128	0 58 17.4	+0.08	17 10.1
8	0 14 15.40	0.113	0 58 16.6	−0.02	17 6.2
9	0 14 17.93	0.098	0 58 18.2	0.12	17 2.3
10	0 14 20.10	0.083	0 58 22.1	0.22	16 58.4
11	0 14 21.89	0.067	0 58 28.5	0.32	16 54.5
12	0 14 23.32	0.052	0 58 37.2	0.42	16 50.6
13	0 14 24.38	0.036	0 58 48.4	0.52	16 46.7
14	0 14 25.06	0.021	0 59 1.9	0.62	16 42.8
15	0 14 25.36	+0.005	0 59 17.8	0.71	16 38.9
16	0 14 25.30	−0.010	0 59 36.1	0.81	16 34.9
17	0 14 24.87	0.025	0 59 56.8	0.91	16 31.0
18	0 14 24.08	0.041	1 0 19.7	1.01	16 27.0
19	0 14 22.92	0.057	1 0 45.1	1.11	16 23.1
20	0 14 21.38	0.073	1 1 12.8	1.21	16 19.1
21	0 14 19.47	0.088	1 1 42.8	1.30	16 15.2
22	0 14 17.19	0.103	1 2 15.3	1.40	16 11.2
23	0 14 14.53	0.118	1 2 50.0	1.49	16 7.2
24	0 14 11.51	0.134	1 3 27.0	1.59	16 3.2
25	0 14 8.12	0.149	1 4 6.3	1.69	15 59.3
26	0 14 4.37	0.164	1 4 47.9	1.79	15 55.3
27	0 14 0.25	0.179	1 5 31.8	1.88	15 51.3
28	0 13 55.77	0.194	1 6 18.0	1.98	15 47.3
29	0 13 50.93	0.209	1 7 6.4	2.07	15 43.2
30	0 13 45.74	0.224	1 7 57.1	2.16	15 39.2
31	0 13 40.18	0.239	1 8 50.0	2.25	15 35.2
32	0 13 34.27	−0.254	−1 9 45.0	−2.34	15 31.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.3	8″.5	8″.6	8″.7
Horizontal Parallax	0.9	1.0	1.0	1.0

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 13 34.27	−0.254	−1 9 45.0	−2.34	15 31.2
2	0 13 28.00	0.268	1 10 42.2	2.42	15 27.1
3	0 13 21.39	0.283	1 11 41.4	2.51	15 23.1
4	0 13 14.44	0.297	1 12 42.7	2.60	15 19.0
5	0 13 7.14	0.311	1 13 46.2	2.69	15 15.0
6	0 12 59.51	0.325	1 14 51.7	2.77	15 10.9
7	0 12 51.54	0.339	1 15 59.2	2.85	15 6.8
8	0 12 43.25	0.352	1 17 8.6	2.93	15 2.8
9	0 12 34.63	0.366	1 18 20.0	3.01	14 58.7
10	0 12 25.69	0.379	1 19 33.3	3.09	14 54.6
11	0 12 16.43	0.392	1 20 48.4	3.17	14 50.5
12	0 12 6.86	0.405	1 22 5.4	3.25	14 46.4
13	0 11 56.97	0.418	1 23 24.2	3.32	14 42.3
14	0 11 46.77	0.431	1 24 44.8	3.40	14 38.2
15	0 11 36.29	0.444	1 26 7.1	3.47	14 34.1
16	0 11 25.50	0.456	1 27 31.2	3.54	14 30.0
17	0 11 14.42	0.468	1 28 56.9	3.61	14 25.8
18	0 11 3.05	0.480	1 30 24.3	3.68	14 21.7
19	0 10 51.40	0.492	1 31 53.3	3.75	14 17.6
20	0 10 39.48	0.503	1 33 23.9	3.81	14 13.5
21	0 10 27.28	0.514	1 34 56.1	3.87	14 9.3
22	0 10 14.81	0.525	1 36 29.7	3.93	14 5.2
23	0 10 2.08	0.536	1 38 4.8	3.99	14 1.0
24	0 9 49.09	0.546	1 39 41.2	4.05	13 56.9
25	0 5 35.85	0.556	1 14 19.0	4.11	13 52.7
26	0 9 22.37	0.566	1 42 58.2	4.16	13 48.6
27	0 9 8.66	0.576	1 44 38.5	4.21	13 44.4
28	0 8 54.72	0.585	1 46 20.0	4.25	13 40.2
29	0 8 40.57	0.594	1 48 2.7	4.30	13 36.1
30	0 8 26.19	0.603	1 49 46.5	4.35	13 31.9
31	0 8 11.61	0.611	1 51 31.3	4.39	13 27.7
32	0 7 56.83	−0.619	−1 53 17.1	−4.43	13 23.5

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.8	8″.9	9″.0	9″.1
Horizontal Parallax	1.0	1.0	1.0	1.0

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

SATURN, 1878.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	0 7 56.83	−0.619	−1 53 17.1	−4.43	13 23.5
2	0 7 41.87	0.627	1 55 3.9	4.47	13 19.4
3	0 7 26.72	0.635	1 56 51.5	4.50	13 15.2
4	0 7 11.39	0.642	1 58 40.0	4.53	13 11.0
5	0 6 55.90	0.649	2 0 29.1	4.56	13 6.8
6	0 6 40.25	0.655	2 2 19.0	4.59	13 2.6
7	0 6 24.45	0.661	2 4 9.6	4.62	12 58.4
8	0 6 8.51	0.667	2 6 0.7	4.64	12 54.2
9	0 5 52.44	0.672	2 7 52.3	4.66	12 50.0
10	0 5 36.24	0.677	2 9 44.4	4.68	12 45.8
11	0 5 19.92	0.682	2 11 36.9	4.70	12 41.6
12	0 5 3.50	0.686	2 13 29.8	4.71	12 37.4
13	0 4 46.99	0.690	2 15 23.1	4.72	12 33.2
14	0 4 30.37	0.694	2 17 16.5	4.73	12 29.0
15	0 4 13.67	0.697	2 19 10.2	4.74	12 24.8
16	0 3 56.90	0.700	2 21 4.0	4.75	12 20.6
17	0 3 40.05	0.703	2 22 57.9	4.75	12 16.4
18	0 3 23.14	0.706	2 24 51.9	4.75	12 12.1
19	0 3 6.18	0.708	2 26 45.8	4.74	12 7.9
20	0 2 49.18	0.709	2 28 39.6	4.74	12 3.7
21	0 2 32.16	0.710	2 30 33.4	4.73	11 59.5
22	0 2 15.11	0.711	2 32 26.8	4.72	11 55.3
23	0 1 58.05	0.711	2 34 20.0	4.71	11 51.1
24	0 1 40.98	0.711	2 36 12.9	4.69	11 46.9
25	0 1 23.92	0.710	2 38 5.3	4.67	11 42.6
26	0 1 6.88	0.709	2 39 57.3	4.65	11 38.4
27	0 0 49.86	0.708	2 41 48.7	4.63	11 34.2
28	0 0 32.87	0.706	2 43 39.6	4.60	11 30.0
29	0 0 15.93	0.704	2 45 29.7	4.58	11 25.8
30	23 59 59.05	0.702	2 47 19.2	4.55	11 21.6
31	23 59 42.23	0.699	2 49 7.8	4.51	11 17.4
32	23 59 25.50	−0.696	−2 50 55.6	−4.47	11 13.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	9″.1	9″.1	9″.1	9″.1
Horizontal Parallax	1.0	1.0	1.0	1.0

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 59 42.23	−0.699	−2 49 7.8	−4.51	11 17.4
2	23 59 25.50	0.696	2 50 55.6	4.47	11 13.2
3	23 59 8.84	0.692	2 52 42.5	4.43	11 9.0
4	23 58 52.27	0.688	2 54 28.4	4.39	11 4.8
5	23 58 35.81	0.684	2 56 13.3	4.35	11 0.6
6	23 58 19.45	0.679	2 57 57.2	4.30	10 56.4
7	23 58 3.22	0.674	2 59 39.8	4.25	10 52.2
8	23 57 47.10	0.668	3 1 21.4	4.20	10 48.0
9	23 57 31.12	0.662	3 3 1.7	4.15	10 43.8
10	23 57 15.29	0.656	3 4 40.7	4.10	10 39.6
11	23 56 59.61	0.649	3 6 18.4	4.04	10 35.4
12	23 56 44.09	0.642	3 7 54.7	3.98	10 31.2
13	23 56 28.74	0.635	3 9 29.6	3.92	10 27.0
14	23 56 13.56	0.627	3 11 3.0	3.86	10 22.8
15	23 55 58.57	0.619	3 12 35.0	3.79	10 18.6
16	23 55 43.77	0.612	3 14 5.3	3.73	10 14.5
17	23 55 29.18	0.604	3 15 34.0	3.66	10 10.3
18	23 55 14.79	0.595	3 17 1.1	3.59	10 6.1
19	23 55 0.62	0.586	3 18 26.4	3.52	10 2.0
20	23 54 46.67	0.577	3 19 50.0	3.44	9 57.8
21	23 54 32.95	0.567	3 21 11.8	3.37	9 53.6
22	23 54 19.45	0.557	3 22 31.8	3.29	9 49.5
23	23 54 6.22	0.546	3 23 49.9	3.21	9 45.3
24	23 53 53.23	0.535	3 25 6.0	3.13	9 41.2
25	23 53 40.51	0.524	3 26 20.1	3.05	9 37.0
26	23 53 28.06	0.512	3 27 32.1	2.97	9 32.9
27	23 53 15.88	0.500	3 28 42.2	2.88	9 28.8
28	23 53 3.99	0.489	3 29 50.1	2.79	9 24.7
29	23 52 52.39	0.477	3 30 55.9	2.69	9 20.5
30	23 52 41.07	0.465	3 31 59.4	2.60	9 16.4
31	23 52 30.06	0.453	3 33 0.8	2.51	9 12.3
32	23 52 19.35	−0.440	−3 34 0.0	−2.42	9 8.2

Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	9″.1	9″.1	9″.0	8″.9
Horizontal Parallax	1.0	1.0	1.0	1.0

NOTE.—North declinations are marked +, south declinations —.

GREENWICH MEAN TIME.

	NOVEMBER.						DECEMBER.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 52 19.35	−0.440	−3 34 0.0	−2.42	9 8.2	1	23 49 41.44	+0.020	−3 44 36.0	+0.73	7 7.7
2	23 52 8.96	0.426	3 34 56.9	2.32	9 4.1	2	23 49 42.10	0.036	3 44 17.2	0.84	7 3.7
3	23 51 58.89	0.413	3 35 51.5	2.23	9 0.0	3	23 49 43.16	0.053	3 43 55.7	0.95	6 59.8
4	23 51 49.14	0.399	3 36 43.8	2.13	8 55.9	4	23 49 44.61	0.069	3 43 31.7	1.06	6 55.9
5	23 51 39.72	0.386	3 37 33.8	2.03	8 51.9	5	23 49 46.47	0.086	3 43 5.1	1.17	6 52.0
6	23 51 30.63	0.372	3 38 21.4	1.93	8 47.8	6	23 49 48.72	0.103	3 42 35.8	1.28	6 48.1
7	23 51 21.88	0.358	3 39 6.6	1.83	8 43.7	7	23 49 51.37	0.119	3 42 4.0	1.39	6 44 2
8	23 51 13.47	0.343	3 39 49.5	1.73	8 39.6	8	23 49 54.41	0.135	3 41 29.6	1.49	6 40.4
9	23 51 5.39	0.329	3 40 29.9	1.63	8 35.6	9	23 49 57.84	0.152	3 40 52.7	1.60	6 36.5
10	23 50 57.67	0.314	3 41 7.8	1.53	8 31.5	10	23 50 1.66	0.168	3 40 13.2	1.70	6 32.6
11	23 50 50.30	0.300	3 41 43.3	1.43	8 27.5	11	23 50 5.88	0.184	3 39 31.1	1.81	6 28.8
12	23 50 43.29	0.285	3 42 16.4	1.32	8 23 4	12	23 50 10.49	0.200	3 38 46.6	1.91	6 24.9
13	23 50 36.62	0.270	3 42 46.9	1.22	8 19.4	13	23 50 15.48	0.217	3 37 59.5	2.02	6 21.1
14	23 50 30.32	0.254	3 43 14.9	1.11	8 15.3	14	23 50 20.87	0.233	3 37 10.0	2.12	6 17.2
15	23 50 24.39	0.239	3 43 40.4	1.01	8 11.3	15	23 50 26.64	0.249	3 36 17.9	2.23	6 13.4
16	23 50 18.83	0.224	3 44 3.4	0.90	8 7.3	16	23 50 32.80	0.265	3 35 23.3	2.33	6 9.6
17	23 50 13.64	0.208	3 44 23.8	0.80	8 3.3	17	23 50 39.34	0.281	3 34 26.4	2.43	6 5.7
18	23 50 8.83	0.192	3 44 41.7	0.69	7 59.3	18	23 50 46.27	0.297	3 33 26.9	2.53	6 1.9
19	23 50 4.39	0.177	3 44 57.0	0.58	7 55.3	19	23 50 53.58	0.313	3 32 24.9	2.63	5 58.1
20	23 50 0.33	0.161	3 45 9.7	0.47	7 51.3	20	23 51 1.28	0.329	3 31 20.5	2.73	5 54.3
21	23 49 56.66	0.145	3 45 19.8	0.36	7 47.3	21	23 51 9.36	0.345	3 30 13.7	2.83	5 50.5
22	23 49 53.38	0.128	3 45 27.3	0.25	7 43.3	22	23 51 17.82	0.361	3 29 4.5	2.93	5 46.7
23	23 49 50.48	0.112	3 45 32.0	0.14	7 39.3	23	23 51 26.65	0.377	3 27 52.9	3.03	5 43.0
24	23 49 47.98	0.096	3 45 34.3	−0.03	7 35.3	24	23 51 35.85	0.392	3 26 38.9	3.13	5 39.2
25	23 49 45.85	0.080	3 45 33.9	+0.08	7 31.4	25	23 51 45.43	0.407	3 25 22.7	3.23	5 35.4
26	23 49 44.13	0.063	3 45 30.8	0.19	7 27.4	26	23 51 55.39	0.422	3 24 4.0	3.33	5 31.6
27	23 49 42.79	0.047	3 45 25.1	0.30	7 23.4	27	23 52 5.70	0.437	3 22 43.1	3.43	5 27.9
28	23 49 41.86	0.030	3 45 16.7	0.40	7 19.5	28	23 52 16.37	0.452	3 21 19.9	3.52	5 24.1
29	23 49 41.32	−0.014	3 45 5.8	6.51	7 15.5	29	23 52 27.41	0.467	3 19 54.3	3.61	5 20.4
30	23 49 41.18	+0.003	3 44 52.3	0.62	7 11.6	30	23 52 38.80	0.482	3 18 26.6	3.70	5 16.6
31	23 49 41.44	0.020	3 44 36.0	0.73	7 7.7	31	23 52 50.54	0.497	3 16 56.7	3.79	5 12.9
32	23 49 42.10	+0.036	−3 44 17.2	+0.84	7 3.7	32	23 53 2.64	+0.511	−3 15 24.6	+3.88	5 9.2

Day of the Month.	1st.	11th.	21st.	31st.	Day of the Month.	1st.	11th.	21st.	31st.
Polar Semidiameter	8″.9	8″.8	8″.7	8″.7	Polar Semidiameter	8″.5	8″.4	8″.2	8″.1
Horizontal Parallax	1.0	1.0	1.0	1.0	Horizontal Parallax	1.0	0.9	0.9	0.9

+ prefixed to the hourly change of declination, indicates that north declinations are increasing and south declinations are decreasing; — indicates that north declinations are decreasing and south declinations increasing.

FOR GRENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	256° 29′ 23″.7	−4° 43′ 42″.1	303° 14′ 2″.0	−1° 44′ 10″.7	312° 14′ 18″.0	−0° 56′ 6″.0
1.5	262 58 0.4	4 28 7.0	309 16 5.8	1 12 2.5	318 11 12.0	−0 23 27.4
2.0	269 23 15.9	4 9 14.6	315 16 11.6	0 39 15.6	324 6 55.4	+0 9 18.9
2.5	275 45 6.8	3 47 24.1	321 14 32.8	−0 6 11.4	330 1 46.7	0 41 52.9
3.0	282 3 31.7	3 22 55.7	327 11 23.4	+0 26 49.2	335 56 3.3	1 13 55.2
3.5	288 18 31.9	2 56 11.6	333 6 58.7	0 59 25.9	341 50 1.5	1 45 6.7
4.0	294 30 11.1	2 27 33.8	339 1 35.6	1 31 19.3	347 43 56.7	2 15 8.6
4.5	300 38 36.3	1 57 25.0	344 55 32.6	2 2 10.7	353 38 3.9	2 43 43.1
5.0	306 43 57.8	1 26 7.7	350 49 9.9	2 31 42.4	359 32 38.0	3 10 32.7
5.5	312 46 29.3	0 54 3.8	356 42 49.8	2 59 37.2	5 27 53.9	3 35 20.9
6.0	318 46 27.8	−0 21 34.8	2 36 56.3	3 25 39.2	11 24 7.2	3 57 52.5
6.5	324 44 13.8	+0 10 58.9	8 31 55.6	3 49 33.2	17 21 34.1	4 17 52.7
7.0	330 40 10.8	0 43 17.6	14 28 15.6	4 11 4.4	23 20 31.7	4 35 8.0
7.5	336 34 45.6	1 15 2.6	20 26 25.7	4 29 58.0	29 21 18.6	4 49 26.1
8.0	324 28 27.6	1 45 56.3	26 26 57.0	4 46 3.6	35 24 14.5	5 0 35.6
8.5	348 21 48.8	2 15 41.6	32 30 21.6	4 59 5.4	41 29 40.6	5 8 26.5
9.0	354 15 23.4	2 44 2.2	38 37 12.2	5 8 52.0	47 37 59.4	5 12 49.6
9.5	0 9 47.5	3 10 42.3	44 48 2.2	5 15 11.7	53 49 34.9	5 13 37.0
10.0	6 5 38.4	3 35 26.4	51 3 23.9	5 17 53.3	60 4 52.0	5 10 42.2
10.5	12 3 34.4	3 57 59.4	57 23 49.1	5 16 46.4	66 24 16.2	5 4 0.4
11.0	18 4 14.2	4 18 5.9	63 49 47.5	5 11 42.1	72 48 13.1	4 53 28.2
11.5	24 8 16.2	4 35 30.8	70 21 46.0	5 2 33.2	79 17 8.7	4 39 4.4
12.0	30 16 17.8	4 49 58.7	77 0 7.4	4 49 14.7	85 51 27.4	4 20 50.1
12.5	36 28 54.8	5 1 14.5	83 45 9.2	4 31 44.6	92 31 31.7	3 58 49.5
13.0	42 46 40.1	5 9 3.3	90 37 2.4	4 10 4.9	99 17 41.0	3 33 10.2
13.5	49 10 2.8	5 13 10.8	97 35 49.9	3 44 22.6	106 10 10.0	3 4 4.0
14.0	55 39 28.0	5 13 23.5	104 41 25.5	3 14 50.0	113 9 7.7	2 31 47.3
14.5	62 15 14.7	5 9 29.6	111 53 32.7	2 41 46.1	120 14 35.4	1 56 42.1
15.0	68 57 34.8	5 1 19.8	119 11 44.2	2 5 36.6	127 26 25.2	1 19 15.9
15.5	75 46 32.5	4 48 48.1	126 35 21.9	1 26 54.6	134 44 19.4	+0 40 2.4
16.0	82 42 3.0	4 31 52.6	134 3 37.7	0 46 19.6	142 7 49.1	−0 0 19.6
16.5	89 43 52.1	4 10 36.9	141 35 34.1	+0 4 36.7	149 36 13.8	0 41 5.8
17.0	96 51 35.8	3 45 10.4	149 10 6.1	−0 37 25.0	157 8 41.9	1 21 28.6
17.5	104 4 40.5	3 15 49.2	156 46 3.3	1 18 54.0	164 44 11.8	2 0 38.4
18.0	111 22 23.8	2 42 56.9	164 22 12.9	1 58 59.1	172 21 33.2	2 37 46.1
18.5	118 43 56.2	2 7 3.8	171 57 21.5	2 36 51.7	179 59 30.1	3 12 4.8
19.0	126 8 22.4	1 38 46.4	179 30 18.6	3 11 47.5	187 36 43.9	3 42 52.6
19.5	133 34 43.4	0 48 46.6	186 59 58.8	3 43 8.7	195 11 55.2	4 9 34.0
20.0	141 1 58.7	+0 7 50.1	194 25 24.6	4 10 25.1	202 43 48.9	4 31 41.6
20.5	148 29 8.4	−0 33 15.6	201 45 47.5	4 33 14.3	210 11 16.7	4 48 57.1
21.0	155 55 15.4	1 13 42.9	209 0 29.2	4 51 21.8	217 33 19.4	5 1 10.4
21.5	163 19 27.1	1 52 46.2	216 9 1.7	5 4 40.9	224 49 8.8	5 8 20.7
22.0	170 40 56.8	2 29 43.2	223 11 8.6	5 13 11.4	231 58 9.7	5 10 33.8
22.5	177 59 5.0	3 3 56.7	230 6 42.6	5 16 58.6	238 59 59.3	5 8 1.8
23.0	185 13 19.5	3 34 54.5	236 55 45.4	5 16 12.4	245 54 26.8	5 1 1.7
23.5	192 23 15.8	4 2 11.1	243 38 26.2	5 11 5.9	252 41 32.6	4 49 53.5
24.0	199 28 36.8	4 25 26.5	250 15 0.1	5 1 55.0	259 21 27.2	4 34 59.4
24.5	206 29 12.2	4 44 26.9	256 45 47.2	4 48 57.4	265 54 29.1	4 16 42.4
25.0	213 24 57.7	4 59 4.0	263 11 11.1	4 32 31.8	272 21 3.4	3 55 26.5
25.5	220 15 53.9	5 9 14.0	269 31 37.7	4 12 57.7	278 41 40.3	3 31 25.1
26.0	227 2 5.8	5 14 57.7	275 47 34.5	3 50 34.8	284 56 53.2	3 5 30.8
26.5	233 43 41.2	5 16 19.6	281 59 29.0	3 25 43.6	291 7 18.0	2 37 35.9
27.0	240 20 50.1	5 13 27.1	288 7 49.4	2 58 44.0	297 13 31.8	2 8 11.8
27.5	246 53 44.4	5 6 30.4	294 13 3.0	2 29 56.2	303 16 11.9	1 37 38.7
28.0	253 22 36.5	4 55 42.3	300 15 36.0	1 59 40.5	309 15 55.2	1 6 16.5
28.5	259 47 39.6	4 41 17.0	306 15 53.2	1 28 17.1	315 13 17.3	0 34 24.5
29.0	266 9 6.7	4 23 30.9	312 14 18.0	0 56 6.0	321 8 52.1	−0 2 21.5
29.5	272 27 11.0	4 2 41.4	318 11 12.0	−0 23 27.4	327 3 11.5	+0 29 34.2
30.0	278 42 5.1	3 39 7.3	324 6 55.4	+0 9 18.9	332 56 44.9	1 1 4.4
30.5	284 54 1.3	3 13 8.3	330 1 46.7	0 41 52.9	338 49 59.3	1 31 51.1
31.0	291 3 11.7	2 45 5.1	335 56 3.3	1 13 55.2	344 43 19.0	2 1 36.5
31.5	297 9 48.0	−2 15 18.8	341 50 1.5	+1 45 6.7	350 37 5.5	+2 30 3.3

FOR GRENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	356° 31′ 38″.2	+2° 56′ 54″.2	29° 13′ 20″.0	+4° 43′ 9″.2	75° 57′ 17″.8	+4° 20′ 53″.8
1.5	2 27 13.6	3 21 52.4	35 20 58.7	4 52 8.8	82 32 13.5	4 1 30.9
2.0	8 24 6.4	3 44 41.9	41 31 23.6	4 57 46.9	89 10 23.1	3 38 41.3
2.5	14 22 29.4	4 5 7.3	47 44 38.2	4 59 55.5	95 51 34.3	3 12 39.5
3.0	20 22 33.7	4 22 54.2	54 0 44.1	4 58 27.8	102 35 34.9	2 43 43.5
3.5	26 24 29.1	4 37 49.2	60 19 41.5	4 53 20.0	109 22 13.1	2 12 15.0
4.0	32 28 25.0	4 49 40.2	66 41 29.9	4 44 31.2	116 11 18.2	1 38 39.3
4.5	38 34 30.0	4 58 16.7	73 6 8.5	4 32 3.0	123 2 40.7	1 3 24.1
5.0	44 42 53.2	5 3 29.7	79 33 37.3	4 15 59.9	129 56 12.7	+0 26 59.9
5.5	50 53 44.0	5 5 12.1	86 3 57.0	3 56 29.3	136 51 47.8	−0 10 1.2
6.0	57 7 12.8	5 3 18.4	92 37 9.7	3 33 41.9	143 49 20.7	0 47 5.3
6.5	63 23 31.1	4 57 45.4	99 13 19.0	3 7 51.4	150 48 46.3	1 23 38.1
7 0	69 42 51.7	4 48 31.9	105 52 30.0	2 39 14.3	157 50 0.1	1 59 5.2
7.5	76 5 29.0	4 35 38.8	112 34 49.3	2 8 10.1	164 52 56.1	2 32 52.1
8.0	82 31 38.6	4 19 9.6	119 20 24.6	1 35 1.4	171 57 27.0	3 4 25.6
8.5	89 1 37.3	3 59 9.9	126 9 23.6	1 0 13.4	179 3 23.2	3 33 14.4
9.0	95 35 42.9	3 35 48.4	133 1 54.2	+0 24 14.1	186 10 31.8	3 58 49.2
9.5	102 14 13.0	3 9 16.6	139 58 3.0	−0 12 26.1	193 18 36.4	4 20 43.9
10.0	108 57 25.0	2 39 49.3	146 57 53.8	0 49 14.5	200 27 16.0	4 38 36.2
10.5	115 45 34.7	2 7 44.6	154 1 27.2	1 25 36.5	207 36 6.1	4 52 7.8
11.0	122 38 55.5	1 33 24.4	161 8 38.9	2 0 56.2	214 44 37.8	5 1 5.9
11.5	129 37 37.0	0 57 14.7	168 19 18.4	2 34 36.8	221 52 18.6	5 5 22.7
12.0	136 41 42.9	+0 19 45.7	175 33 8.2	3 6 2.0	228 58 33.9	5 4 55.4
12.5	143 51 10.1	−0 18 28.8	182 49 42.9	3 34 36.2	236 2 47.3	4 59 48.3
13.0	151 5 47.3	0 56 50.9	190 8 28.8	3 59 46.4	243 4 22.6	4 50 10.9
13.5	158 25 13.4	1 34 39.9	197 28 44.8	4 21 3.0	250 2 44.7	4 36 17.5
14.0	165 48 56.5	2 11 12.9	204 49 42.4	4 38 1.4	256 57 21.4	4 18 27.0
14.5	173 16 14.4	2 45 46.5	212 10 27.8	4 50 22.7	263 47 44.4	3 57 2.5
15.0	180 46 14.3	3 17 38.2	219 30 3.9	4 57 54.9	270 33 30.8	3 32 29.8
15.5	188 17 54.6	3 46 8.2	226 47 32.0	5 0 33.0	277 14 23.8	3 5 16.6
16.0	195 50 6.8	4 10 41.6	234 1 55.4	4 58 19.1	283 50 12.8	2 35 51.7
16.5	203 21 37.9	4 30 49.6	241 12 21.3	4 51 22.6	290 20 53.9	2 4 44.1
17.0	210 51 13.7	4 46 11.2	248 18 2.6	4 39 58.8	296 46 29.8	1 32 22.0
17.5	218 17 42.1	4 56 33.4	255 18 20 7	4 24 28.3	303 7 9.6	0 59 12.8
18.0	225 39 56.5	5 1 52.2	262 12 46.2	4 5 15.4	309 23 8.1	−0 25 42.2
18.5	232 56 58.3	5 2 11.2	269 0 59.4	5 42 47.0	315 34 45.2	+0 7 45.8
19.0	240 7 59.3	4 57 41.5	275 42 50.8	3 17 31.5	321 42 25.1	0 40 49.1
19.5	247 12 22.9	4 48 40.0	282 18 20.1	2 49 57.8	327 46 36.1	1 13 7.4
20.0	254 9 44.8	4 35 28.2	288 47 36.2	2 20 34.4	333 47 49.7	1 44 22.1
20.5	260 59 52.9	4 18 30.7	295 10 55.6	1 49 48.5	339 46 39.9	2 14 16.4
21.0	267 42 46.5	3 58 13.7	302 28 41.5	1 18 6.0	345 43 42.6	2 42 34.5
21.5	274 18 35.3	3 35 4.4	307 41 22.2	0 45 50.9	351 39 34.7	3 9 2.0
22.0	280 47 37.4	3 9 29.6	313 49 31.0	−0 13 25.5	357 34 54.6	3 33 25.3
22.5	287 10 18.3	2 41 55.3	319 53 44.1	+0 18 49.5	3 30 20.5	3 55 31.6
23.0	293 27 9.4	2 12 46.3	325 54 40.1	0 50 35.3	9 26 30.3	4 15 8.5
23.5	299 38 46.1	1 42 26.2	331 52 59.0	1 21 34.2	15 24 1.1	4 32 4.0
24.0	305 45 46.7	1 11 16.8	337 49 21.7	1 51 29.5	21 23 28.5	4 46 6.6
24.5	311 48 51.6	0 39 38.9	343 44 29.0	2 20 5.7	27 25 26.2	4 57 5.2
25.0	317 48 41.9	−0 7 51.9	249 39 0.7	2 47 8.0	33 30 25.4	5 4 48.8
25.5	323 45 58.6	+0 23 46.0	355 33 35.6	3 12 21.9	39 38 54.0	5 9 7.6
26.0	329 41 22 0	0 54 57.0	1 28 50.8	3 35 33.3	45 51 16.4	5 9 52.6
26.5	335 35 31.2	1 25 24.4	7 25 21.0	3 56 28.5	52 7 53.2	5 6 55.9
27.0	341 29 2.9	1 54 51.6	13 23 38.0	4 14 53.9	58 28 59.8	5 0 11.7
27.5	347 22 31.5	2 23 2.6	19 24 10.4	4 30 36.2	64 54 47.2	4 49 36.3
28.0	353 16 29.0	2 49 41.5	25 27 23.5	4 43 22.8	71 25 20.2	4 35 8.9
28.5	359 11 24.2	3 14 32.7	31 33 38.2	4 53 1.5	78 0 39.2	4 16 52.4
29.0	5 7 42.7	3 37 20.8	37 43 12.1	4 59 21.2	84 40 38.2	3 54 53.4
29.5	11 5 46.4	3 57 50.8	43 56 18.0	5 2 12.1	91 25 6.2	3 29 22.9
30.0	17 5 54.3	4 15 47.9	50 13 4.2	5 1 26.0	98 13 47.5	3 0 36.8
30.5	23 8 21.5	4 30 58.3	56 33 34.9	4 56 57.0	105 6 22.3	2 28 55.6
31.0	29 13 20.0	4 43 9.2	62 57 50.4	4 48 41.6	112 2 27.0	1 54 44.5
31.5	35 20 58.7	+4 52 8.8	69 25 47.0	+4 36 39.6	119 1 36.1	+1 18 32.9

FOR GRENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	112° 2′ 27″.0	+1° 54′ 44″.5	164° 27′ 31″.0	−2° 44′ 22″.5	218° 11′ 26″.8	−5° 12′ 43″.3
1.5	119 1 36.1	1 18 32.9	171 47 54.7	3 17 42.6	225 22 56.6	5 13 35.9
2.0	126 3 22.2	0 40 53.9	179 7 17.2	3 47 43.1	232 28 42.7	5 9 38.4
2.5	133 7 17.8	+0 2 23.8	186 24 57.5	4 13 54.1	239 28 32.7	5 1 6.3
3.0	140 12 55.2	−0 36 19.7	193 40 19.2	4 35 51.8	246 22 23.2	4 48 18.6
3.5	147 19 48.0	1 14 37.9	200 52 51.1	4 53 18.6	253 10 18.3	4 31 37.0
4.0	154 27 31.1	1 51 51.9	208 2 7.8	5 6 3.0	259 52 28.6	4 11 25.0
4.5	161 35 41.0	2 27 24.1	215 7 49.3	5 13 59.8	266 29 9.6	3 48 7.2
5.0	168 43 56.5	3 0 39.2	222 9 40.8	5 17 9.1	273 0 40.4	3 22 8.5
5.5	175 51 57.5	3 31 4.8	229 7 32.4	5 15 35.9	279 27 22.5	2 53 54.1
6.0	182 59 26.2	3 58 11.6	236 1 18.7	5 9 29.6	285 49 39.1	2 23 49.1
6.5	190 6 6.0	4 21 34.7	242 50 57.6	4 59 3.3	292 7 54.4	1 52 18.1
7.0	197 11 41.0	4 40 53.6	249 36 30.0	4 44 33.3	298 22 31.8	1 19 45.1
7.5	204 15 56.1	4 55 52.2	256 17 59.6	4 26 18.4	304 33 54.5	0 46 33.7
8.0	211 18 36.7	5 6 19.3	262 55 31.5	4 4 39.8	310 42 25.0	−0 13 6.6
8.5	218 19 28.2	5 12 8.7	269 29 12.3	3 39 59.9	316 48 24.1	+0 20 13.9
9.0	225 18 16.2	5 13 18.9	275 59 9.5	3 12 42.7	322 52 11.2	0 53 6.6
9.5	232 14 46.2	5 9 53.0	282 25 31.7	2 43 12.9	328 54 4.2	1 25 11.1
10.0	239 8 43.7	5 1 58.3	288 48 27.2	2 11 56.0	334 54 19.8	1 56 7.8
10.5	245 59 54.3	4 49 47.3	295 8 5.1	1 39 17.3	340 53 13.1	2 25 38.1
11.0	252 48 4.1	4 33 35.5	301 24 34.8	1 5 42.5	346 50 58.3	2 53 24.8
11.5	259 32 59.9	4 13 41.6	307 38 5.5	−0 31 36.5	352 47 49.0	3 19 11.7
12.0	266 14 29.9	3 50 27.8	313 48 47.3	+0 2 36.2	358 43 58.4	3 42 44.0
12.5	272 52 23.7	3 24 18.5	319 56 50.5	0 36 32.0	4 39 39.8	4 3 48.4
13.0	279 26 33.0	2 55 39.6	326 2 26.3	1 9 48.5	10 35 6.8	4 22 12.9
13.5	285 56 52.0	2 24 58.3	332 5 46.6	1 42 4.7	16 30 33.5	4 37 47.0
14.0	292 23 17.5	1 52 42.2	338 7 4.8	2 13 0.9	22 26 15.1	4 50 21.6
14.5	298 45 49.8	1 19 18.8	344 6 35.6	2 42 18.8	28 22 28.2	4 59 48.9
15.0	305 4 32.3	0 45 14.9	350 4 35.2	3 9 41.8	34 19 31.0	5 6 2.6
15.5	311 19 31.7	−0 10 56.6	356 1 21.4	3 34 55.1	40 17 43.5	5 8 57.8
16.0	317 30 58.2	+0 23 11.4	1 57 13.7	3 57 44.9	46 17 27.6	5 8 30.6
16.5	323 39 5.7	0 56 46.2	7 52 33.7	4 17 59.1	52 19 7.1	5 4 38.6
17.0	329 44 11.0	1 29 26.6	13 47 44.8	4 35 26.9	58 23 8.0	4 57 20.5
17.5	335 46 34.2	2 0 52.9	19 43 12.3	4 49 58.6	64 29 58.2	4 46 36.5
18.0	341 46 38.0	2 30 47.3	25 39 23.4	5 1 25.5	70 40 7.1	4 32 27.8
18.5	347 44 48.1	2 58 53.9	31 36 46.6	5 9 40.0	76 54 5.4	4 14 57.4
19.0	353 41 32.3	3 24 57.4	37 35 52.0	5 14 35.4	83 12 24.2	3 54 9.9
19.5	359 37 20.7	3 48 44.8	43 37 11.3	5 16 5.7	89 35 35.1	3 30 12.4
20.0	5 32 45.0	4 10 3.7	49 41 17.2	5 14 5.8	96 4 8.2	3 3 14.0
20.5	11 28 18.7	4 28 42.8	55 48 42.3	5 8 31.7	102 38 32.2	2 33 26.8
21.0	17 24 35.9	4 44 31.5	61 59 59.7	4 59 20.3	109 19 12.6	2 1 6.8
21.5	23 22 11.6	4 57 19.8	68 15 41.6	4 46 30.1	116 6 30.2	1 26 33.6
22.0	29 21 41.1	5 6 58.4	74 36 18.9	4 30 1.2	123 0 39.9	0 50 11.5
22.5	35 23 39.1	5 13 18.6	81 2 20.0	4 9 55.7	130 1 48.7	+0 12 29.1
23.0	41 28 40.1	5 16 12.0	87 34 10.4	3 46 18.8	137 9 54.0	−0 26 0.1
23.5	47 37 16.8	5 15 31.2	94 12 11.4	3 19 18.8	144 24 42.6	1 4 38.0
24.0	53 49 59.7	5 11 9.7	100 56 38.4	2 49 8.2	151 45 49.1	1 42 42.3
24.5	60 7 16.8	5 3 2.5	107 47 40.3	2 16 4.0	159 12 35.1	2 19 28.3
25.0	66 29 32.7	4 51 6.1	114 45 18.5	1 40 28.1	166 44 9.8	2 54 10.0
25.5	72 57 7.7	4 35 19.6	121 49 25.1	1 2 48.1	174 19 30.4	3 26 1.8
26.0	79 30 17.0	4 15 44.9	128 59 42.8	+0 23 37.3	181 57 23.9	3 54 21.6
26.5	86 9 10.3	3 52 27.3	136 15 44.1	−0 16 26.3	189 36 30.3	4 18 31.9
27.0	92 53 50.4	3 25 36.6	143 36 51.5	0 56 40.0	197 15 25.3	4 38 2.2
27.5	99 44 13.6	2 55 27.1	151 2 17.3	1 36 18.1	204 52 44.2	4 52 30.8
28.0	106 40 8.6	2 22 18.5	158 31 5.6	2 14 33.2	212 27 6.4	5 1 44.8
28.5	113 41 16.8	1 46 35.8	166 2 13.4	2 50 38.4	219 57 18.3	5 5 41.1
29.0	120 47 12.6	1 8 49.6	173 34 33.1	3 23 49.5	227 22 16.2	5 4 24.9
29.5	127 57 23.4	+0 29 35.1	181 6 54.9	3 53 26.3	234 41 9.1	4 58 9.5
30.0	135 11 11.1	−0 10 28.0	188 38 8.7	4 18 55.2	241 53 20.0	4 47 14.3
30.5	142 27 52.7	0 50 37.4	196 7 9.0	4 39 49.6	248 58 24.9	4 32 3.1
31.0	149 46 42.0	1 30 8.8	203 32 55.3	4 55 51.3	255 56 13.3	4 13 3.1
31.5	157 6 51.0	−2 8 18.1	210 54 35.5	−5 6 49.9	262 46 46.3	−3 50 42.9

FOR GRENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	255° 56′ 13″.4	−4° 13′ 3″.1	304° 14′ 10″.3	−0° 23′ 36″.9	337° 4′ 59″.5	+2° 39′ 31″.6
1.5	262 46 46.3	3 50 42.9	310 29 5.2	+0 9 25.7	343 6 2.5	3 6 7.7
2.0	269 30 15.0	3 25 31.8	316 39 17.5	0 41 56.8	349 4 41.1	3 30 30.1
2.5	276 6 58.7	2 57 58.6	322 45 26.8	1 13 36.9	355 1 34.3	3 52 27.6
3.0	282 37 22.7	2 28 31.4	328 48 13.0	1 44 8.5	0 57 20.0	4 11 50.0
3.5	289 1 56.9	1 57 37.2	334 48 15.0	2 13 15.3	6 52 34.5	4 28 27.9
4.0	295 21 14.0	1 25 41.4	340 46 9.9	2 40 42.3	12 47 51.8	4 42 12.6
4.5	301 35 48.5	0 53 8.0	346 42 33.0	3 6 15.5	18 43 43.3	4 52 56.1
5.0	307 46 14.9	−0 20 19.5	352 37 57.0	3 29 41.7	24 40 37.6	5 0 31.2
5.5	313 53 7.7	+0 12 22.7	358 32 52.0	3 50 48.6	30 39 0.4	5 4 51.4
6.0	319 57 0.1	0 44 38.4	4 27 44.8	4 9 24.4	36 39 13.8	5 5 51.4
6.5	325 58 23.7	1 16 8.5	10 22 59.1	4 25 18.5	42 41 36.5	5 3 27.1
7.0	331 57 47.9	1 46 35.1	16 18 55.6	4 38 20.8	48 46 24.2	4 57 36.0
7.5	337 55 39.8	2 15 40.9	22 15 52.1	4 48 22.6	54 53 49.0	4 48 17.3
8.0	343 52 23.9	2 43 9.5	28 14 3.0	4 55 16.2	61 3 59.8	4 35 32.5
8.5	349 48 22.1	3 8 45.4	34 13 40.4	4 58 55.2	67 17 2.5	4 19 25.3
9.0	355 43 53.8	3 32 14.1	40 14 53.9	4 59 14.8	73 33 0.6	4 0 2.1
9.5	1 39 15.8	3 53 22.1	46 17 51.0	4 56 12.1	79 51 55.0	3 37 32.1
10.0	7 34 43.0	4 11 56.9	52 22 38.4	4 49 46.0	86 13 45.4	3 12 7.6
10.5	13 30 28.3	4 27 47.1	58 29 21.0	4 39 57.6	92 38 30.0	2 44 3.7
11.0	19 26 43.2	4 40 42.9	64 38 3.8	4 26 50.1	99 6 6.4	2 13 38.6
11.5	25 23 38.3	4 50 35.7	70 48 51.8	4 10 28.9	105 36 32.8	1 41 13.2
12.0	31 21 23.3	4 57 18.6	77 1 50.9	3 51 1.8	112 9 47.2	1 7 10.9
12.5	37 20 8.3	5 0 46.1	83 17 8.4	3 28 38.9	118 45 48.9	+0 31 57.4
13.0	43 20 3.6	5 0 54.4	89 34 53.2	3 4 32.5	125 24 38.4	−0 3 59.5
13.5	49 21 19.9	4 57 41.5	95 55 16.2	2 35 57.2	132 6 17.2	0 40 10.5
14.0	55 24 9.6	4 51 7.1	102 18 30.3	2 6 9.8	138 50 47.6	1 16 5.0
14.5	61 28 46.9	4 41 12.5	108 44 50.5	1 34 29.0	145 38 12.7	1 51 12.0
15.0	67 35 28.1	4 28 0.9	115 14 33.8	1 1 15.9	152 28 36.0	2 24 59.7
15.5	73 44 31.5	4 11 37.1	121 47 58.5	+0 26 53.5	159 22 0.2	2 56 56.7
16.0	79 56 17.7	3 52 7.6	128 25 23.5	−0 8 13.3	166 18 26.8	3 26 31.8
16.5	86 11 9.8	3 29 40.9	135 7 7.8	0 43 37.2	173 17 55.2	3 53 15.3
17.0	92 29 32.8	3 4 27.4	141 53 29.1	1 18 49.1	180 20 21.7	4 16 39.0
17.5	98 51 53.1	2 36 39.5	148 44 42.8	1 53 18.3	187 25 38.8	4 36 16.7
18.0	105 18 38.2	2 6 31.9	155 41 0.5	2 26 32.4	194 33 33.8	4 51 45.5
18.5	111 50 15.9	1 34 21.9	162 42 28.2	2 57 57.8	201 43 49.0	5 2 46.0
19.0	118 27 13.3	1 0 29.5	169 49 5.1	3 27 0.2	208 56 0.4	5 9 3.4
19.5	125 9 55.6	+0 25 17.9	177 0 41.8	3 53 5.7	216 9 38.4	5 10 28.0
20.0	131 58 44.4	−0 10 46.7	184 16 59.4	4 15 41.6	223 24 8.0	5 6 55.9
20.5	138 53 56.3	0 47 14.3	191 37 28.3	4 34 17.6	230 38 49.4	4 58 29.5
21.0	145 55 40.9	1 23 31.7	119 1 28.2	4 48 27.1	237 52 59.0	4 45 17.4
21.5	153 3 59.2	1 59 2.6	206 28 8.7	4 57 48.7	245 5 51.2	4 27 34.7
22.0	160 18 41.8	2 33 8.3	213 56 30.1	5 2 7.8	252 16 39.5	4 5 42.6
22.5	167 39 26.8	3 5 8.1	221 25 26.3	5 1 16.8	259 24 39.2	3 40 7.2
23.0	175 5 39.2	3 34 21.3	228 53 46.7	4 55 16.7	266 29 8.1	3 11 19.1
23.5	182 36 31.0	4 0 8.5	236 20 19.7	4 44 16.7	273 29 28.8	2 39 51.9
24.0	190 11 1.4	4 21 53.5	243 43 55.9	4 28 33.6	280 25 9.7	2 6 20.9
24.5	197 47 59.0	4 39 5.4	251 3 31.0	4 8 31.2	287 15 45.9	1 31 21.9
25.0	205 26 3.3	4 51 20.2	258 18 8.7	3 44 38.8	294 1 0.1	0 55 30.3
25.5	213 3 49.5	4 58 22.1	265 27 2.7	3 17 29.9	300 40 42.3	−0 19 19.7
26.0	220 39 51.8	5 0 5.1	272 29 38.0	2 47 40.0	307 14 50.2	+0 16 38.3
26.5	228 12 47.3	4 56 31.6	279 25 31.1	2 15 45.4	313 43 28.8	0 51 55.6
27.0	235 41 20.3	4 47 54.1	286 14 30.2	1 42 21.7	320 6 49.4	1 26 6.2
27.5	243 4 25.2	4 34 31.7	292 56 35.0	1 8 3.1	326 25 9.1	1 58 47.6
28.0	250 21 9.0	4 16 50.3	299 31 54.3	−0 33 21.0	332 38 50.0	2 29 41.1
28.5	257 30 52.7	3 55 20.1	306 0 45.5	+0 1 15.6	338 48 18.7	2 58 29.3
29.0	264 33 11.5	3 30 33.5	312 23 33.0	0 35 20.9	344 54 5.5	3 24 58.3
29.5	271 27 54.6	3 3 4.4	318 40 46.7	1 8 32.2	350 56 43.2	3 48 56.1
30.0	278 15 3.8	2 33 26.4	324 53 0.8	1 40 29.2	356 56 46.3	4 10 12.5
30.5	284 54 51.4	2 2 11.5	331 0 52.2	2 10 54.2	2 54 51.1	4 28 38.7
31.0	291 27 38.6	1 29 49.9	337 4 59.5	2 39 31.6	8 51 34.6	4 44 7.0
31.5	297 53 53.7	−0 56 49.8	343 6 2.5	+3 6 7.7	14 47 34.2	+4 56 30.9

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1878.	23° 27′	″	s	″	″	″	° ′
Jan. 0	24.95	+10.23	+0.625	0.00	−20.80	9.00	324 39.6
10	24.99	10.77	0.659	1.38	20.79	9.00	324 7.8
20	25.07	11.21	0.686	2.75	20.77	8.99	323 36.1
30	25.20	11.51	0.704	4.13	20.74	8.98	323 4.3
Feb 9	25.33	11.64	0.712	5.50	20.71	8.96	322 32.6
19	25.45	11.62	0.711	6.88	−20.67	8.94	322 0.7
Mar. 1	25.53	11.46	0.701	8.26	20.63	8.92	321 29.0
11	25.56	11.20	0.685	9.63	20.57	8.90	320 57.2
21	25.52	10.89	0.666	11.01	20.51	8.87	320 25.4
31	25.42	10.59	0.648	12.38	20.45	8.85	319 53.7
Apr. 10	25.26	10.34	0.632	13.76	−20.39	8.82	319 21.9
20	25.05	10.18	0.623	15.14	20.34	8.80	318 50.1
30	24.81	10.15	0.621	16.51	20.29	8.78	318 18.3
May 10	24.55	10.25	0.627	17.89	20.24	8.76	317 46.6
20	24.31	10.49	0.641	19.26	20.19	8.74	317 14.8
30	24.10	10.84	0.663	20.64	−20.16	8.72	316 42.0
June 9	23.93	11.30	0.691	22.02	20.13	8.71	316 11.2
19	23.82	11.79	0.721	23.39	20.11	8.71	315 39.5
29	23.76	12.30	0.752	24.77	20.11	8.70	315 7.7
July 9	23.77	12.76	0.781	26.14	20.10	8.70	314 35.9
19	23.82	13.15	0.804	27.52	−20.12	8.71	314 4.2
29	23.91	13.43	0.822	28.90	20.14	8.72	313 32.4
Aug. 8	24.02	13.58	0.831	30.27	20.17	8.73	313 0.6
18	24.12	13.59	0.831	31.65	20.20	8.75	312 28.8
28	24.21	13.47	0.824	33.02	20.24	8.77	311 57.1
Sept. 7	24.25	13.24	0.810	34.40	−20.29	8.79	311 25.3
17	24.24	12.94	0.792	35.78	20.35	8.81	310 53.5
27	24.16	12.61	0.771	37.15	20.41	8.84	310 21.7
Oct. 7	24.03	12.30	0.752	38.53	20.47	8.87	309 50.0
17	23.83	12.06	0.738	39.90	20.53	8.88	309 18.2
27	23.59	11.94	0.730	41.28	−20.59	8.91	308 46.4
Nov. 6	23.33	11.96	0.731	42.66	20.64	8.93	308 14.5
16	23.06	12.13	0.742	44.03	20.69	8.95	307 42.9
26	22.81	12.46	0.762	45.41	20.73	8.97	307 11.1
Dec. 6	22.60	12.92	0.790	46.78	−20.76	8.98	306 39.3
16	22.45	13.46	0.823	48.16	20.78	8.99	306 7.6
26	22.37	14.03	0.858	49.54	20.79	9.00	305 35.8
36	22.35	+14.58	+0.892	50.91	−20.79	9.00	305 4.0

Mean Obliquity, 1878.0,	23° 27′ 17″.99	Motion in 100 days,—0″.1272		Daily Motion.
Precession for 1878.5, . .	50″.2589	Log.	1.70121	
Precession in a Solar Day, .	0″.1376	Log.	9.13862	−3′.177
Precession in a Sidereal Day,	0″.1372	Log.	9.13743	
Sun's Mean Hor. Parallax, .	8″.848			

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
Jan. 0	9.3126	n0.8432	n0.5426	1.3029					
1	9.3207	0.8434	0.5816	1.3014	Mar. 1	9.5947	n0.8823	n1.2501	0.8114
2	9.3287	0.8436	0.6173	1.2997	2	9.5972	0.8827	1.2526	0.7880
h 3	9.3365	0.8439	0.6501	1.2979	3	9.5997	0.8830	1.2549	0.7631
(7.0) 4	9.3441	0.8442	0.6804	1.2959	4	0.6022	0.8833	1.2571	0.7365
5	9.3516	0.8445	0.7087	1.2938	h 5	9.6046	0.8836	1.2591	0.7081
6	9.3589	n0.8448	n0.7351	1.2915	(11.0) 6	9.6070	n0.8838	n1.2610	0.6775
7	9.3660	0.8452	0.7598	1.2891	7	9.6094	0.8840	1.2628	0.6447
8	9.3730	0.8456	0.7830	1.2866	8	9.6118	0.8841	1.2644	0.6089
9	9.3798	0.8461	0.8050	1.2839	9	9.6141	0.8842	1.2658	0.5698
10	9.3865	0.8466	0.8258	1.2810	10	9.6164	0.8843	1.2672	0.5267
11	9.3930	n0.8471	n0.8455	1.2779	11	9.6187	n0.8844	n1.2684	0.4793
12	9.3994	0.8477	0.8640	1.2747	12	9.6209	0.8844	1.2694	0.4248
13	9.4057	0.8482	0.8818	1.2714	13	9.6232	0.8844	1.2703	0.3631
14	9.4118	0.8488	0.8988	1.2679	14	9.6254	0.8843	1.2711	0.2904
15	9.4179	0.8495	0.9151	1.2642	15	9.6276	0.8842	1.2718	0.2041
16	9.4238	n0.8501	n0.9306	1.2604	16	9.6298	n0.8841	n1.2723	0.0955
17	9.4296	0.8508	0.9454	1.2563	17	9.6319	0.8839	1.2727	9.9504
18	9.4352	0.8515	0.9596	1.2521	18	9.6311	0.8837	1.2730	9.7305
h 19	9.4408	0.8522	0.9732	1.2477	19	9.6362	0.8834	1.2731	p9.2623
(8.0) 20	9.4462	0.8530	0.9862	1.2432	h 20	9.6383	0.8832	1.2731	n9.2280
21	9.4515	n0.8537	n0.9987	1.2384	(12.0) 21	9.6404	n0.8828	n1.2730	n9.7162
22	9.4567	0.8545	1.0108	1.2335	22	9.6425	0.8824	1.2727	9.9430
23	9.4618	0.8553	1.0224	1.2284	23	9.6446	0.8820	1.2723	0.0900
24	9.4668	0.8561	1.0335	1.2230	24	9.6467	0.8816	1.2718	0.1995
25	9.4717	0.8569	1.0442	1.2175	25	9.6488	0.8811	1.2712	0.2867
26	9.4765	n0.8578	n1.0545	1.2118	26	9.6509	n0.8806	n1.2704	n0.3590
27	9.4812	0.8586	1.0645	1.2058	27	9.6530	0.8800	1.2695	0.4239
28	9.4858	0.8595	1.0741	1.1997	28	9.6550	0.8795	1.2685	0.4748
29	9.4903	0.8603	1.0834	1.1933	29	9.6571	0.8788	1.2673	0.5226
30	9.4947	0.8612	1.0923	1.1866	30	9.6592	0.8782	1.2660	0.5657
31	9.4991	0.8621	1.1009	1.1797	31	9.6612	0.8775	1.2646	0.6048
Feb. 1	9.5033	n0.8629	n1.1091	1.1726	Apr. 1	9.6633	n0.8767	n1.2630	n0.6404
2	9.5075	0.8638	1.1172	1.1653	2	9.6654	0.8760	1.2613	0.6732
h 3	9.5116	0.8647	1.1250	1.1577	3	9.6675	0.8751	1.2595	0.7036
(9.0) 4	9.5156	0.8655	1.1324	1.1498	4	9.6695	0.8743	1.2575	0.7318
5	9.5195	0.8664	1.1396	1.1416	h 5	9.6716	0.8734	1.2554	0.7581
6	9.5234	n0.8672	n1.1466	1.1331	(13.0) 6	9.6737	n0.8725	n1.2532	n0.7828
7	9.5271	0.8680	1.1533	1.1243	7	9.6758	0.8716	1.2508	0.8061
8	9.5308	0.8689	1.1598	1.1152	8	9.6779	0.8706	1.2483	0.8281
9	9.5344	0.8697	1.1660	1.1058	9	9.6800	0.8696	1.2456	0.8489
10	9.5380	0.8705	1.1720	1.0960	10	9.6821	0.8686	1.2428	0.8686
11	9.5415	n0.8713	n1.1778	1.0859	11	9.6842	n0.8675	n1.2398	n0.8872
12	9.5449	0.8721	1.1834	1.0754	12	9.6863	0.8665	1.2367	0.9050
13	9.5483	0.8729	1.1887	1.0645	13	9.6884	0.8653	1.2335	0.9220
14	9.5516	0.8736	1.1939	1.0532	14	9.6906	0.8642	1.2301	0.9381
15	9.5548	0.8744	1.1989	1.0414	15	9.6927	0.8630	1.2265	0.9536
16	9.5580	n0.8751	n1.2037	1.0292	16	9.6949	n0.8618	n1.2228	n0.9684
17	9.5611	0.8758	1.2083	1.0165	17	9.6971	0.8606	1.2189	0.9826
h 18	9.5642	0.8765	1.2127	1.0033	18	9.6992	0.8593	1.2149	0.9963
(10.0) 19	9.5672	0.8772	1.2169	0.9895	19	9.7014	0.8581	1.2107	1.0093
20	9.5701	0.8778	1.2210	0.9752	h 20	9.7036	0.8568	1.2063	1.0220
21	9.5730	n0.8784	n1.2249	0.9603	(14.0) 21	9.7058	n0.8554	n1.2018	n1.0340
22	9.5759	0.8790	1.2286	0.9446	22	9.7081	0.8541	1.1971	1.0456
23	9.5787	0.8795	1.2322	0.9282	23	9.7103	0.8527	1.1923	1.0568
24	9.5815	0.8800	1.2356	0.9111	24	9.7125	0.8514	1.1872	1.0676
25	9.5842	0.8805	1.2388	0.8931	25	9.7148	0.8500	1.1820	1.0780
26	9.5869	n0.8810	n1.2418	0.8743	26	9.7170	n0.8486	n1.1766	n1.0880
27	9.5896	0.8815	1.2447	0.8544	27	9.7193	0.8472	1.1710	1.0977
28	9.5922	0.8819	1.2475	0.8335	28	9.7216	0.8457	1.1652	1.1070
29	9.5947	0.8823	1.2501	0.8114	29	9.7239	0.8443	1.1592	1.1160
30	9.5972	n0.8827	n1.2526	0.7880	30	9.7262	n0.8428	n1.1530	n1.1247

Jan. 0 to July 20, E = + 0″.03.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
May 1	9.7285	n0.8413	n1.1466	n1.1331	July 1	9.8731	n0.7794	0.5187	n1.3038
2	9.7308	0.8398	1.1399	1.1412	2	9.8753	0.7794	0.5573	1.3024
3	9.7331	0.8383	1.1330	1.1491	3	9.8774	0.7795	0.5926	1.3009
4	9.7354	0.8368	1.1259	1.1567	4	9.8795	0.7796	0.6252	1.2993
5	9.7377	0.8353	1.1186	1.1640	5	9.8816	0.7797	0.6554	1.2976
(15^{h}.0) 6	9.7401	n0.8338	n1.1110	n1.1711	(19^{h}.0) 6	9.8837	n0.7799	0.6835	n1.2957
7	9.7425	0.8323	1.1032	1.1779	7	9.8857	0.7801	0.7098	1.2937
8	9.7449	0.8308	1.0950	1.1846	8	9.8877	0.7804	0.7344	1.2916
9	9.7473	0.8293	1.0866	1.1910	9	9.8898	0.7807	0.7576	1.2894
10	9.7496	0.8277	1.0780	1.1971	10	9.8918	0.7810	0.7795	1.2870
11	9.7520	n0.8262	n1.0690	n1.2031	11	9.8938	n0.7814	0.8003	n1.2845
12	9.7544	0.8247	1.0597	1.2089	12	9.8957	0.7818	0.8200	1.2818
13	9.7568	0.8232	1.0501	1.2144	13	9.8977	0.7822	0.8388	1.2790
14	9.7592	0.8217	1.0401	1.2197	14	9.8996	0.7827	0.8566	1.2761
15	9.7617	0.8202	1.0298	1.2249	15	9.9015	0.7832	0.8736	1.2730
16	9.7641	n0.8187	n1.0191	n1.2299	16	9.9034	n0.7837	0.8899	n1.2698
17	9.7665	0.8173	1.0081	1.2347	17	9.9053	0.7842	0.9055	1.2664
18	9.7690	0.8158	0.9966	1.2393	18	9.9071	0.7848	0.9204	1.2629
19	9.7714	0.8144	0.9847	1.2438	19	9.9089	0.7854	0.9347	1.2593
20	9.7739	0.8129	0.9723	1.2481	20	9.9107	0.7860	0.9484	1.2555
(16^{h}.0) 21	9.7763	n0.8115	n0.9594	n1.2522	(20^{h}.0) 21	9.9125	n0.7866	0.9616	n1.2515
22	9.7788	0.8101	0.9460	1.2562	22	9.9143	0.7873	0.9743	1.2474
23	9.7812	0.8087	0.9321	1.2600	23	9.9161	0.7879	0.9865	1.2431
24	9.7837	0.8074	0.9176	1.2636	24	9.9178	0.7886	0.9983	1.2386
25	9.7861	0.8060	0.9025	1.2671	25	9.9195	0.7894	1.0097	1.2340
26	9.7886	n0.8047	n0.8867	n1.2705	26	9.9212	n0.7901	1.0206	n1.2292
27	9.7910	0.8034	0.8702	1.2737	27	9.9229	0.7909	1.0312	1.2242
28	9.7935	0.8022	0.8529	1.2767	28	9.9245	0.7916	1.0414	1.2190
29	9.7959	0.8009	0.8348	1.2796	29	9.9261	0.7924	1.0512	1.2137
30	9.7984	0.7997	0.8157	1.2824	30	9.9278	0.7932	1.0607	1.2081
31	9.8008	0.7985	0.7957	1.2851	31	9.9294	0.7940	1.0699	1.2024
June 1	9.8033	n0.7973	n0.7746	n1.2876	Aug. 1	9.9309	n0.7948	1.0788	n1.1965
2	9.8057	0.7961	0.7522	1.2899	2	9.9325	0.7957	1.0874	1.1904
3	9.8082	0.7950	0.7286	1.2921	3	9.9340	0.7965	1.0957	1.1840
4	9.8106	0.7939	0.7035	1.2942	4	9.9355	9.7973	1.1037	1.1775
5	9.8130	0.7929	0.6767	1.2962	(21^{h}.0) 5	9.9370	0.7981	1.1115	1.1707
(17^{h}.0) 6	9.8155	n0.7919	n0.6480	n1.2980	6	9.9385	n0.7989	1.1190	n1.1636
7	9.8179	0.7909	0.6172	1.2997	7	9.9400	0.7998	1.1262	1.1563
8	9.8203	0.7900	0.5839	1.3013	8	9.9414	0.8006	1.1332	1.1488
9	9.8227	0.7891	0.5478	1.3027	9	9.9428	0.8014	1.1400	1.1410
10	9.8251	0.7882	0.5081	1.3041	10	9.9443	0.8022	1.1466	1.1330
11	9.8275	n0.7873	n0.4644	n1.3053	11	9.9456	n0.8030	1.1530	n1.1247
12	9.8299	0.7865	0.4157	1.3063	12	9.9470	0.8038	1.1591	1.1161
13	9.8323	0.7858	0.3607	1.3073	13	9.9484	0.8046	1.1651	1.1072
14	9.8347	0.7851	0.2976	1.3081	14	9.9497	0.8054	1.1709	1.0980
15	9.8370	0.7844	0.2235	1.3088	15	9.9510	0.8062	1.1765	1.0884
16	9.8394	n0.7838	n0.1341	n1.3094	16	9.9523	n0.8070	1.1818	n1.0784
17	9.8417	0.7832	0.0212	1.3099	17	9.9536	0.8077	1.1870	1.0682
18	9.8441	0.7826	9.8680	1.3102	18	9.9549	0.8085	1.1920	1.0575
19	9.8464	0.7821	9.6292	1.3105	19	9.9561	0.8092	1.1968	1.0465
20	9.8487	0.7817	n9.0536	1.3106	20	9.9573	0.8099	1.2015	1.0351
(18^{h}.0) 21	9.8510	n0.7813	p9.2969	n1.3106	(22^{h}.0) 21	9.9585	n0.8106	1.2059	n1.0232
22	9.8533	0.7809	9.7077	1.3104	22	9.9597	0.8112	1.2103	1.0107
23	9.8555	0.7806	9.9151	1.3102	23	9.9609	0.8119	1.2144	0.9979
24	9.8578	0.7803	0.0547	1.3098	24	9.9621	0.8125	1.2184	0.9845
25	9.8600	0.7800	0.1600	1.3093	25	9.9633	0.8131	1.2223	0.9705
26	9.8623	n0.7798	0.2446	n1.3087	26	9.9644	n0.8137	1.2259	n0.9559
27	9.8645	0.7796	0.3153	1.3079	27	9.9656	0.8142	1.2295	0.9407
28	9.8667	0.7795	0.3760	1.3071	28	9.9667	0.8147	1.2329	0.9248
29	9.8689	0.7794	0.4291	1.3061	29	9.9678	0.8152	1.2361	0.9082
30	9.8710	0.7794	0.4762	1.3050	30	9.9689	0.8157	1.2392	0.8907
31	9.8731	n0.7794	0.5187	n1.3038	31	9.9699	n0.8161	1.2421	n0.8724

Jan. 0 to July 20, E = + 0″.03.

July 20 to Sept. 25, E = + 0″.04.

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR REDUCTION OF MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.	Solar day. Sid. hour.	Log. A.	Log. B.	Log. C.	Log. D.
Sept. 1	9.9710	n0.8165	1.2449	n0.8533	Nov. 1	0.0311	n0.7678	1.1594	1.1157
2	9.9721	0.8169	1.2476	0.8332	2	0.0322	0.7659	1.1530	1.1247
3	9.9731	0.8173	1.2501	0.8118	3	0.0334	0.7640	1.1463	1.1334
h 4	9.9742	0.8176	1.2225	0.7892	h 4	0.0345	0.7621	1.1394	1.1418
(23.0) 5	9.9752	0.8178	1.2548	0.7651	(3.0) 5	0.0357	0.7602	1.1323	1.1499
6	9.9762	n0.8181	1.2569	n0.7395	6	0.0368	n0.7582	1.1249	1.1577
7	9.9772	0.8183	1.2589	0.7122	7	0.0380	0.7562	1.1172	1.1653
8	9.9782	0.8185	1.2607	0.6829	8	0.0392	0.7542	1.1093	1.1726
9	9.9792	0.8186	1.2624	0.6513	9	0.0404	0.7522	1.1011	1.1796
10	9.9802	0.8187	1.2640	0.6170	10	0.0416	0.7503	1.0926	1.1864
11	9.9812	n0.8188	1.2655	n0.5797	11	0.0428	n0.7483	1.0837	1.1930
12	9.9822	0.8188	1.2668	0.5388	12	0.0441	0.7463	1.0745	1.1994
13	9.9831	0.8188	1.2680	0.4935	13	0.0453	0.7443	1.0650	1.2055
14	9.9841	0.8187	1.2691	0.4425	14	0.0465	0.7423	1.0552	1.2114
15	9.9850	0.8186	1.2700	0.3847	15	0.0478	0.7403	1.0449	1.2171
16	9.9860	n0.8185	1.2709	n0.3178	16	0.0490	n0.7383	1.0343	1.2227
17	9.9869	0.8183	1.2716	0.2386	17	0.0503	0.7363	1.0233	1.2280
18	9.9879	0.8181	1.2721	0.1413	18	0.0516	0.7344	1.0118	1.2331
h 19	9.9888	0.8179	1.2726	0.0152	h 19	0.0529	0.7324	0.9999	1.2380
(0.0) 20	9.9897	0.8176	1.2729	9.8368	(4.0) 20	0.0542	0.7305	0.9875	1.2427
21	9.9907	n0.8172	1.2731	n9.5282	21	0.0555	n0.7286	0.9746	1.2473
22	9.9916	0.8168	1.2731	p8.0800	22	0.0568	0.7267	0.9611	1.2517
23	9.9925	0.8164	1.2731	9.5579	23	0.0581	0.7248	0.9471	1.2559
24	9.9934	0.8160	1.2729	9.8521	24	0.0594	0.7229	0.9325	1.2599
25	9.9944	0.8155	1.2725	0.0259	25	0.0607	0.7211	0.9172	1.2637
26	9.9953	n0.8149	1.2721	0.1492	26	0.0621	n0.7193	0.9011	1.2674
27	9.9962	0.8143	1.2715	0.2454	27	0.0634	0.7175	0.8843	1.2709
28	9.9971	0.8136	1.2708	0.3241	28	0.0647	0.7157	0.8668	1.2743
29	9.9980	0.8129	1.2700	0.3905	29	0.0661	0.7140	0.8484	1.2775
30	9.9990	0.8122	1.2690	0.4482	30	0.0674	0.7123	0.8289	1.2805
Oct. 1	9.9999	n0.8114	1.2679	0.4990	Dec. 1	0.0687	n0.7107	0.8084	1.2834
2	0.0008	0.8106	1.2667	0.5442	2	0.0701	0.7091	0.7867	1.2861
3	0.0017	0.8097	1.2653	0.5851	3	0.0715	0.7075	0.7638	1.2887
h 4	0.0027	0.8088	1.2638	0.6224	h 4	0.0728	0.7059	0.7394	1.2911
(1.0) 5	0.0036	0.8078	1.2621	0.6567	(5.0) 5	0.0742	0.7044	0.7134	1.2934
6	0.0045	n0.8068	1.2604	0.6884	6	0.0756	n0.7029	0.6856	1.2956
7	0.0055	0.8058	1.2585	0.7177	7	0.0769	0.7015	0.6557	1.2975
8	0.0064	0.8047	1.2564	0.7451	8	0.0783	0.7002	0.6235	1.2994
9	0.0074	0.8036	1.2542	0.7709	9	0.0797	0.6989	0.5887	1.3011
10	0.0083	0.8024	1.2519	0.7951	10	0.0811	0.6976	0.5505	1.3026
11	0.0093	n0.8012	1.2494	0.8178	11	0.0824	n0.6964	0.5085	1.3041
12	0.0102	0.8000	1.2468	0.8393	12	0.0838	0.6953	0.4620	1.3053
13	0.0112	0.7987	1.2440	0.8597	13	0.0852	0.6942	0.4094	1.3065
14	0.0122	0.7974	1.2411	0.8791	14	0.0865	0.6931	0.3496	1.3075
15	0.0132	0.7960	1.2380	0.8975	15	0.0879	0.6921	0.2800	1.3084
16	0.0142	n0.7946	1.2348	0.9150	16	0.0893	n0.6912	0.1969	1.3091
17	0.0152	0.7932	1.2314	0.9318	17	0.0906	0.6903	0.0938	1.3096
18	0.0162	0.7917	1.2278	0.9478	18	0.0920	0.6895	9.9569	1.3101
h 19	0.0172	0.7902	1.2241	0.9631	h 19	0.0933	0.6888	9.7597	1.3104
(2.0) 20	0.0182	0.7886	1.2203	0.9777	(6.0) 20	0.0947	0.6881	p9.3828	1.3106
21	0.0192	n0.7871	1.2163	0.9918	21	0.0960	n0.6874	n8.9540	1.3106
22	0.0203	0.7855	1.2121	1.0053	22	0.0974	0.6869	9.6282	1.3105
23	0.0213	0.7838	1.2077	1.0183	23	0.0987	0.6864	9.8798	1.3102
24	0.0223	0.7821	1.2031	1.0308	24	0.1000	0.6859	0.0382	1.3099
25	0.0234	0.7804	1.1983	1.0428	25	0.1014	0.6855	0.1537	1.3094
26	0.0245	0.7787	1.1934	1.0544	26	0.1027	0.6852	0.2448	1.3087
27	0.0256	n0.7770	1.1883	1.0656	27	0.1040	n0.6849	n0.3199	1.3079
28	0.0267	0.7752	1.1829	1.0764	28	0.1054	0.6847	0.3840	1.3069
29	0.0278	0.7734	1.1773	1.0868	29	0.1067	0.6845	0.4396	1.3058
30	0.0289	0.7715	1.1715	1.0968	30	0.1080	0.6845	0.4887	1.3046
31	0.0300	0.7697	1.1656	1.1064	31	0.1093	0.6844	0.5327	1.3033
32	0.0311	n0.7678	1.1594	1.1157	32	0.1105	n0.6845	n0.5727	1.3018

Sept. 25 to Dec. 10, E = + 0″.03.

Dec. 10 to Dec. 31, E = + 0″.04.

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	"		° ′		° ′		"	s	h m	h m
Jan. 0	0.0020	+ 9.49	0.9083	300 35	1.3094	350 9	n0.1796	− 1.51	+ 0.633	20 2.3	23 20.6
1	.0047	9.67	0.9106	301 2	1.3092	349 12	0.2187	1.65	0.645	20 4.2	23 16.8
2	.0075	9.85	0.9129	301 29	1.3089	348 16	0.2545	1.80	0.657	20 6.0	23 13.1
h 3	.0102	10.03	0.9152	301 56	1.3086	347 19	0.2873	1.94	0.669	20 7.7	23 9.3
(7.0) 4	.0130	10.20	0.9176	302 22	1.3083	346 23	0.3177	2.08	0.680	20 9.5	23 5.5
5	.0157	10.38	0.9200	302 47	1.3080	345 26	0.3460	2.22	0.692	20 11.2	23 1.7
6	.0184	+ 10.55	0.9224	203 12	1.3077	344 29	n0.3725	− 2.36	+ 0.704	20 12.8	22 57.9
7	.0212	10.73	0.9248	303 37	1.3073	343 32	0.3972	2.50	0.715	20 14.5	22 54.1
8	.0239	10.90	0.9272	304 1	1.3070	342 35	0.4203	2.63	0.727	20 16.1	22 50.3
9	.0266	11.08	0.9297	304 25	1.3066	341 38	0.4423	2.77	0.738	20 17.7	22 46.5
10	.0294	11.25	0.9322	304 48	1.3062	340 41	0.4631	2.90	0.750	20 19.2	22 42.7
11	.0321	+ 11.42	0.9346	305 11	1.3057	339 43	n0.4828	− 3.04	+ 0.761	20 20.7	22 38.9
12	.0349	11.59	0.9371	305 33	1.3053	338 46	0.5015	3.17	0.773	20 22.2	22 35.1
13	.0376	11.76	0.9395	305 54	1.3048	337 49	0.5193	3.31	0.784	20 23.6	22 31.3
14	.0403	11.92	0.9420	306 15	1.3044	336 51	0.5362	3.44	0.795	20 25.0	22 27.4
15	.0431	12.09	0.9445	306 36	1.3039	335 53	0.5525	3.57	0.806	20 26.4	22 23.5
16	.0458	+ 12.26	0.9470	306 56	1.3034	334 55	n0.5680	− 3.70	+ 0.817	20 27.7	22 19.7
17	.0485	12.42	0.9495	307 15	1.3029	333 57	0.5828	3.82	0.828	20 29.0	22 15.8
18	.0513	12.58	0.9521	307 34	1.3023	332 59	0.5970	3.95	0.839	20 30.2	22 11.9
h 19	.0540	12.74	0.9546	307 52	1.3018	332 1	0.6105	4.08	0.850	20 31.5	22 8.1
(8.0) 20	.0568	12.90	0.9572	308 10	1.3012	331 2	0.6235	4.20	0.860	20 32.7	22 4.2
21	.0595	+ 13.06	0.9597	308 27	1.3007	330 4	n0.6361	− 4.33	+ 0.871	20 33.8	22 0.3
22	.0623	13.22	0.9622	308 44	1.3001	329 5	0.6481	4.45	0.881	20 35.0	21 56.4
23	.0650	13.37	0.9647	309 1	1.2995	328 7	0.6598	4.57	0.892	20 36.1	21 52.4
24	.0677	13.53	0.9672	309 17	1.2989	327 8	0.6709	4.69	0.902	20 37.2	21 48.5
25	.0705	13.68	0.9697	309 33	1.2983	326 8	0.6817	4.80	0.912	20 38.2	21 44.5
26	.0732	+ 13.84	0.9721	309 49	1.2977	325 9	n0.6919	− 4.92	+ 0.922	20 39.3	21 40.6
27	.0759	13.99	0.9746	310 4	1.2970	324 9	0.7019	5.03	0.932	20 40.3	21 36.6
28	.0787	14.14	0.9770	310 18	1.2964	323 10	0.7115	5.14	0.942	20 41.2	21 32.7
29	.0814	14.28	0.9794	310 33	1.2957	322 10	0.7208	5.26	0.952	20 42.2	21 28.7
30	.0841	14.43	0.9818	310 47	1.2951	321 10	0.7298	5.37	0.962	20 43.1	21 24.7
31	.0869	14.57	0.9842	311 0	1.2944	320 10	0.7384	5.47	0.971	20 44.0	21 20.7
Feb. 1	.0896	+ 14.71	0.9865	311 13	1.2938	319 10	n0.7466	− 5.58	+ 0.981	20 44.9	21 16.7
2	.0924	14.85	0.9889	311 26	1.2931	318 10	0.7546	5.68	0.990	20 45.8	21 12.6
h 3	.0951	14.99	0.9912	311 39	1.2925	317 9	0.7623	5.78	1.000	20 46.6	21 8.6
(9.0) 4	.0978	15.13	0.9934	311 51	1.2918	316 8	0.7698	5.88	1.009	20 47.4	21 4.6
5	.1006	15.27	0.9956	312 4	1.2911	315 7	0.7770	5.98	1.018	20 48.2	21 0.5
6	.1033	+ 15.40	0.9978	312 15	1.2905	314 6	n0.7840	− 6.08	+ 1.027	20 49.0	20 56.4
7	.1060	15.54	1.0000	312 27	1.2898	313 5	0.7907	6.18	1.036	20 49.8	20 52.3
8	.1088	15.67	1.0022	312 38	1.2891	312 4	0.7972	6.27	1.045	20 50.5	20 48.2
9	.1115	15.80	1.0043	312 49	1.2885	311 2	0.8034	6.36	1.054	20 51.2	20 44.2
10	.1143	15.93	1.0064	313 0	1.2878	310 1	0.8094	6.45	1.062	20 52.0	20 40.1
11	.1170	+ 16.06	1.0084	313 10	1.2872	308 59	n0.8152	− 6.54	+ 1.071	20 52.7	20 35.9
12	.1197	16.19	1.0105	313 21	1.2865	307 57	0.8208	6.62	1.079	20 53.4	20 31.8
13	.1224	16.32	1.0124	313 31	1.2859	306 55	0.8262	6.70	1.088	20 54.1	20 27.7
14	.1252	16.44	1.0144	313 41	1.2853	305 52	0.8314	6.78	1.096	20 54.7	20 23.5
15	.1279	16.56	1.0164	313 51	1.2846	304 50	0.8364	6.86	1.104	20 55.4	20 19.3
16	.1307	+ 16.68	1.0183	314 1	1.2840	303 47	n0.8412	− 6.94	+ 1.112	20 56.1	20 15.1
17	.1334	16.80	1.0201	314 10	1.2834	302 44	0.8457	7.01	1.120	20 56.7	20 10.9
h 18	.1361	16.92	1.0220	314 20	1.2828	301 41	0.8501	7.08	1.128	20 57.3	20 6.7
(10.0) 19	.1389	17.04	1.0238	314 29	1.2822	300 38	0.8544	7.15	1.136	20 57.9	20 2.6
20	.1416	17.16	1.0256	314 38	1.2817	299 35	0.8585	7.22	1.143	20 58.6	19 58.4
21	.1444	+ 17.27	1.0273	314 47	1.2811	298 32	n0.8624	− 7.28	+ 1.151	20 59.2	19 54.1
22	.1471	17.38	1.0290	314 56	1.2806	297 29	0.8661	7.35	1.159	20 59.8	19 49.9
23	.1498	17.50	1.0307	315 5	1.2800	296 25	0.8696	7.41	1.166	21 0.4	19 45.7
24	.1526	17.61	1.0324	315 14	1.2795	295 21	0.8729	7.46	1.174	21 0.9	19 41.4
25	.1553	17.72	1.0340	315 23	1.2790	204 17	0.8761	7.52	1.181	21 1.5	19 37.1
26	.1580	+ 17.83	1.0356	315 32	1.2785	293 13	n0.8792	− 7.57	+ 1.189	21 2.1	19 32.9
27	.1608	17.94	1.0372	315 40	1.2781	292 9	0.8522	7.62	1.196	21 2.7	19 28.6
28	.1635	18.05	1.0387	315 49	1.2777	291 5	0.8850	7.67	1.203	21 3.3	19 24.3
29	.1662	18.15	1.0402	315 58	1.2772	290 0	0.8876	7.72	1.210	21 3.9	19 20.0
30	0.1690	+ 18.26	1.0417	316 7	1.2768	288 56	n0.8900	− 7.76	+ 1.217	21 4.4	19 15.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		′	s	h m	h m
Mar. 1	0.1662	+18.15	1.0402	315 58	1.2772	290 0	*n*0.8876	−7.72	+1.210	21 3.9	19 20.0
2	.1690	18.26	1.0417	316 7	1.2768	288 56	0.8900	7.76	1.217	21 4.4	19 15.7
3	.1717	18.37	1.0432	316 15	1.2764	287 52	0.8924	7.80	1.224	21 5.0	19 11.4
4	.1745	18.47	1.0446	316 24	1.2760	286 47	0.8946	7.84	1.231	21 5.6	19 7.1
5	.1772	18.57	1.0460	316 32	1.2756	285 42	0.8966	7.88	1.238	21 6 2	19 2.8
(11ʰ.0) 6	.1800	+18.68	1.0474	316 41	1.2753	284 38	*n*0.8984	−7.91	+1.245	21 6.7	18 58.5
7	.1827	18.78	1.0487	316 50	1.2750	283 33	0.9002	7.94	1.252	21 7.3	18 54.2
8	.1854	18.88	1.0501	316 58	1.2747	282 28	0.9018	7.97	1.258	21 7.9	18 49.9
9	.1882	18.98	1.0514	317 7	1.2745	281 23	0.9033	8.00	1.265	21 8.4	18 45.6
10	.1909	19.08	1.0527	317 15	1.2742	280 18	0.9046	8.03	1.272	21 9.0	18 41.2
11	.1936	+19.18	1.0539	317 24	1.2740	279 13	*n*0.9058	−8.05	+1.279	21 9.6	18 36.9
12	.1964	19.28	1.0551	317 33	1.2738	278 8	0.9069	8.07	1.285	21 10.2	18 32.6
13	.1991	19.38	1.0563	317 42	1.2737	277 3	0.9078	8.09	1.292	21 10.8	18 28.2
14	.2019	19.48	1.0575	317 51	1.2735	275 58	0.9085	8.10	1.299	21 11.4	18 23.9
15	.2046	19.58	1.0587	318 0	1.2734	274 53	0.9092	8.11	1.305	21 12.0	18 19.6
16	.2073	+19.67	1.0598	318 9	1.2733	273 48	*n*0.9097	−8.12	+1.312	21 12.6	18 15.2
17	.2101	19.77	1.0610	318 18	1.2732	272 43	0.9101	8.13	1.318	21 13.2	18 10.9
18	.2128	19.87	1.0621	318 27	1.2732	271 38	0.9104	8.14	1.325	21 13.8	18 6.6
19	.2155	19.97	1.0632	318 37	1.2731	270 34	0.9105	8.14	1.331	21 14.5	18 2.2
20	.2183	20.07	1.0642	318 46	1.2731	269 29	0.9106	8.14	1.338	21 15.1	17 57.9
(12ʰ.0) 21	.2210	+20.16	1.0653	318 56	1.2731	268 24	*n*0.9105	−8.14	+1.344	21 15.7	17 53.6
22	.2238	20.26	1.0663	319 6	1.2732	267 19	0.9102	8.13	1.351	21 16.4	17 49.3
23	.2265	20.36	1.0673	319 15	1.2733	266 14	0.9098	8.12	1.357	21 17.0	17 45.0
24	.2292	20.46	1.0684	319 25	1.2734	265 10	0.9093	8.11	1.364	21 17.7	17 40.6
25	.2320	20.56	1.0694	319 35	1.2735	264 5	0.9086	8.10	1.371	21 18.3	17 36.3
26	.2347	+20.66	1.0704	319 45	1.2736	263 0	*n*0.9078	−8.09	+1.377	21 19.0	17 32.0
27	.2374	20.76	1.0713	319 56	1.2738	261 56	0.9070	8.07	1.384	21 19.7	17 27.7
28	.2402	20.86	1.0723	320 6	1.2740	260 52	0.9059	8.05	1.390	21 20.4	17 23.4
29	.2429	20.95	1.0733	320 17	1.2742	259 47	0.9047	8.03	1.397	21 21.1	17 19.1
30	.2457	21.05	1.0743	320 27	1.2744	258 43	0.9034	8.00	1.404	21 21.8	17 14.8
31	.2484	21.15	1.0752	320 38	1.2747	257 39	0.9020	7.98	1.410	21 22.5	17 10.6
Apr. 1	.2511	+21.25	1.0761	320 49	1.2750	256 35	*n*0.9004	−7.95	+1.417	21 23.3	17 6.3
2	.2539	21.36	1.0771	321 0	1.2753	255 31	0.8987	7.92	1.424	21 24.0	17 2.1
3	.2566	21.46	1.0780	321 11	1.2756	254 28	0.8968	7.89	1.431	21 24.7	16 57.8
4	.2594	21.56	1.0789	321 22	1.2759	253 24	0.8949	7.85	1.437	21 25.5	16 53.6
5	.2621	21.66	1.0799	321 34	1.2763	252 21	0.8928	7.81	1.444	21 26.3	16 49.4
(13ʰ.0) 6	.2648	+21.77	1.0808	321 45	1.2767	251 17	*n*0.8906	−7.77	+1.451	21 27.0	16 45.2
7	.2676	21.87	1.0817	321 57	1.2771	250 14	0.8882	7.73	1.458	21 27.8	16 41.0
8	.2703	21.98	1.0827	322 9	1.2775	249 11	0.8857	7.69	1.465	21 28.6	16 36.7
9	.2730	22.08	1.0836	322 21	1.2779	248 8	0.8830	7 64	1.472	21 29.4	16 32.6
10	.2758	22.19	1.0846	322 32	1.2784	247 6	0.8802	7.59	1.479	21 30.2	16 28.4
11	.2785	+22.30	1.0855	322 45	1.2789	246 3	*n*0.8773	−7.54	+1.487	21 31.0	16 24.2
12	.2813	22.41	1.0865	322 57	1.2793	245 1	0.8742	7.48	1.494	21 31.8	16 29.1
13	.2840	22.52	1.0874	323 9	1.2798	243 59	0.8710	7.43	1.501	21 32.6	16 15.9
14	.2867	22.63	1.0884	323 22	1.2803	242 57	0.8676	7.37	1.508	21 33.5	16 11.8
15	.2895	22.74	1.0894	323 34	1.2809	241 55	0.8640	7.31	1.516	21 34.3	16 7.7
16	.2922	+22.86	1.0903	323 47	1.2814	240 53	*n*0.8602	−7.25	+1.524	21 35.1	16 3.5
17	.2950	22.97	1.0913	324 0	1.2819	239 52	0.8564	7.18	1.531	21 36.0	15 59.4
18	.2977	23.08	1.0923	324 13	1.2825	238 51	0.8524	7.12	1.539	21 36.8	15 55.4
19	.3004	23.20	1.0933	324 26	1.2831	237 50	0.8481	7.05	1.547	21 37.7	15 51.3
20	.3032	23.32	1.0943	324 39	1.2837	236 49	0.8438	6.98	1.554	21 38.6	15 47.3
(14ʰ.0) 21	.3059	+23.44	1.0954	324 52	1.2843	235 49	*n*0.8394	−6.90	+1.562	21 39.5	15 43.2
22	.3086	23.56	1.0964	325 5	1.2849	234 48	0.8347	6.83	1.570	21 40.3	15 39.2
23	.3114	23.68	1.0975	325 18	1.2855	233 48	0.8298	6.76	1.578	21 41.2	15 35.2
24	.3141	23.80	1.0986	325 32	1.2861	232 48	0.8247	6.68	1.587	21 42.1	15 31.2
25	.3168	23.92	1.0997	325 45	1.2867	231 48	0.8194	6.60	1.595	21 43.0	15 27.2
26	.3196	+24.05	1.1008	325 59	1.2873	230 48	*n*0.8140	−6.52	+1.603	21 43.9	15 23.2
27	.3223	24.17	1.1019	326 12	1.2879	229 49	0.8085	6.43	1.611	21 44.8	15 19.3
28	.3251	24.30	1.1030	326 26	1.2885	228 50	0.8027	6.35	1.620	21 45.7	15 15.3
29	.3278	24.43	1·1042	326 39	1.2892	227 51	0.7968	6.26	1.628	21 46.6	15 11.4
30	.3305	24.56	1.1053	326 53	1.2898	226 52	0.7906	6.17	1.637	21 47.5	15 7.5
31	0.3333	+24.69	1.1065	327 7	1.2904	225 53	*n*0.7840	−6.08	+1.646	21 48.5	15 3.5

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
May 1	0.3333	+24.69	1.1065	327 7	1.2904	225 53	*n*0.7840	−6.08	+1.646	21 48.5	15 3.5
2	.3360	24.82	1.1077	327 20	1.2911	224 55	0.7775	5.99	1.655	21 49.4	14 59.7
3	.3387	24.95	1.1089	327 34	1.2917	223 56	0.7705	5.89	1.664	21 50.3	14 55.8
4	.3415	25.09	1.1102	327 48	1.2923	222 58	0.7635	5.80	1.673	21 51.2	14 51.9
5	.3442	25.22	1.1114	328 2	1.2930	222 0	0.7562	5.70	1.682	21 52.1	14 48.0
($15^{h}.0$) 6	.3470	+25.36	1.1127	328 15	1.2936	221 3	*n*0.7486	−5.61	+1.691	21 53.0	14 44.2
7	.3497	25.50	1.1140	328 29	1.2942	220 5	0.7408	5.51	1.700	21 53.9	14 40.3
8	.3525	25.64	1.1153	328 43	1.2949	219 8	0.7327	5.40	1.709	21 54.8	14 36.5
9	.3552	25.78	1.1167	328 56	1.2955	218 11	0.7243	5.30	1.719	21 55.8	14 32.7
10	.3579	25.92	1.1180	329 10	1.2961	217 14	0.7155	5.19	1.728	21 56.7	14 28.9
11	.3607	+26.06	1.1194	329 24	1.2967	216 17	*n*0.7065	−5.09	+1.738	21 57.6	14 25.2
12	.3634	26.21	1.1208	329 37	1.2973	215 21	0.6972	4.98	1.747	21 58.5	14 21.4
13	.3661	26.35	1.1222	329 51	1.2979	214 25	0.6875	4.87	1.757	21 59.4	14 17.7
14	.3689	26.50	1.1236	330 4	1.2985	213 28	0.6775	4.76	1.767	22 0.3	14 14.0
15	.3716	26.65	1.1251	330 18	1.2990	212 33	0.0672	4.65	1.777	22 1.2	14 10.2
16	.3744	+26.80	1.1266	330 31	1.2996	211 37	*n*0.6565	−4.53	+1.787	22 2.1	14 6.5
17	.3771	26.95	1.1281	330 44	1.3002	210 41	0.6455	4.42	1·797	22 2.9	14 2.8
18	.3798	27.10	1.1296	330 57	1.3007	209 46	0.6342	4 31	1.807	22 3.8	13 59.1
19	.3826	27.25	1.1311	331 10	1.3012	208 50	0.6223	4.19	1.817	22 4.7	13 55.4
20	.3853	27.41	1.1326	331 23	1.3018	207 55	0.6097	4.07	1.827	22 5.5	13 51.7
($16^{h}.0$) 21	.3880	+27.56	1.1342	331 36	1.3023	207 0	*n*0.5967	−3.95	+1.837	22 6.4	13 48.0
22	.3908	27.72	1.1358	331 49	1.3028	206 5	0.5834	3.83	1.848	22 7.2	13 44.4
23	.3935	27.87	1.1374	332 1	1.3033	205 11	0.5695	3.71	1.858	22 8.1	13 40.7
24	.3963	28.03	1.1390	332 14	1.3037	204 16	0.5549	3.59	1.869	22 8.9	13 37.1
25	.3990	28.19	1.1406	332 26	1.3042	203 21	0.5398	3.46	1.879	22 9.7	13 33.4
26	.4017	+28.35	1.1423	332 38	1.3047	202 27	*n*0.5240	−3.34	+1.890	22 10.5	13 29.8
27	.4045	28.51	1.1440	332 50	1.3051	201 33	0.5075	3.22	1.901	22 11.3	13 26.2
28	.4072	28.67	1.1456	333 2	1.3055	200 39	0.4902	3.09	1.912	22 12.1	13 22.6
29	.4100	28.83	1.1473	333 14	1.3059	199 45	0.4721	2.97	1.922	22 12.9	13 19.0
30	.4127	29.00	1.1491	333 26	1.3063	198 51	0.4531	2.84	1.933	22 13.7	13 15.4
31	.4154	29.16	1.1508	333 37	1.3067	197 57	0.4331	2.71	1.944	22 14.5	13 11.8
June 1	.4182	+29.33	1.1525	333 49	1.3071	197 4	*n*0.4120	−2.58	+1.955	22 15.2	13 8.3
2	.4209	29.49	1.1543	334 0	1.3074	196 10	0.3897	2.45	1.966	22 16.0	13 4.7
3	.4236	29.66	1.1561	334 11	1.3077	195 17	0.3660	2.32	1.977	22 16.7	13 1.1
4	.4264	29.83	1.1578	334 22	1.3081	194 24	0.3408	2.19	1.988	22 17.4	12 57.6
5	.4291	29.99	1.1596	334 32	1.3084	193 30	0.3139	2.06	2.000	22 18.2	12 54.0
($17^{h}.0$) 6	.4319	+30.16	1.1614	334 43	1.3086	192 37	*n*0.2852	−1.93	+2.011	22 18.9	12 50.5
7	.4346	30.33	1.1632	334 53	1.3089	191 44	0.2544	1.80	2.022	22 19.6	12 46.9
8	.4373	30.50	1.1650	335 4	1.3091	190 51	0.2211	1.66	2.033	22 20.2	12 43.4
9	.4400	30.67	1.1668	335 14	1.3093	189 58	0.1849	1.53	2.045	22 20.9	12 39.9
10	.4428	30.84	1.1687	335 23	1.3095	189 5	0.1452	1.40	2.056	22 21.6	12 36.3
11	.4455	+31.01	1.1705	335 33	1.3097	188 12	*n*0.1014	−1.26	+2.067	22 22.2	12 32.8
12	.4483	31.18	1.1724	335 43	1.3099	187 19	0.0525	1.13	2.079	22 22.8	12 29.3
13	.4510	31.35	1.1742	335 52	1.3101	186 27	9.9972	0.99	2.090	22 23.5	12 25.8
14	.4537	31.53	1.1761	336 1	1.3102	185 34	9.9338	0.86	2.102	22 24.1	12 22.3
15	.4565	31.70	1.1779	336 10	1.3103	184 42	*n*9.8593	0.72	2.113	22 24.7	12 18.8
16	.4592	+31.87	1.1798	336 19	1.3104	183 49	9.7690	−0.59	+2.125	22 25.2	12 15.3
17	.4620	32.04	1.1817	336 27	1.3105	182 57	9.6538	0.46	2.136	22 25.8	12 11.8
18	.4647	32.21	1.1836	336 35	1.3105	182 4	9.5184	0.33	2.148	22 26.4	12 8.3
19	.4674	32.38	1.1854	336 44	1.3106	181 11	9.2790	0.19	2.159	22 26.9	12 4.8
20	.4702	32.56	1.1873	336 52	1.3106	180 19	*n*8.6990	−0.05	2.171	22 27.4	12 1.3
($18^{h}.0$) 21	.4729	+32.73	1.1892	336 59	1.3107	179 26	*p*8.9030	+0 08	+2.182	22 28.0	11 57.8
22	.4756	32.90	1.1910	337 7	1.3107	178 34	9.3273	0.21	2.194	22 28.5	11 54.3
23	.4784	33.08	1.1929	337 14	1.3106	177 41	9.5456	0.35	2.205	22 28.9	11 50.8
24	.4811	33.25	1.1948	337 21	1.3105	176 49	9.6885	0.49	2.217	22 29.4	11 47.3
25	.4838	33.42	1.1967	337 28	1.3104	175 56	9.7951	0.62	2.228	22 29.9	11 43.8
26	.4866	+33.59	1.1985	337 35	1.3103	175 4	9.8815	+0.76	+2.239	22 30.3	11 40.3
27	.4893	33.76	1.2004	337 42	1.3102	174 11	9.9516	0.90	2.251	22 30.8	11 36.8
28	.4921	33.93	1.2023	337 48	1.3100	173 19	0.0125	1.03	2.262	22 31.2	11 33.3
29	.4948	34.11	1.2041	337 55	1.3099	172 26	0.0659	1.16	2.274	22 31.6	11 29.8
30	.4975	34.28	1.2060	338 1	1.3097	171 34	0.1133	1.30	2.285	22 32.0	11 26.2
31	0.5003	+34.45	1.2079	338 7	1.3095	170 41	0.1559	+1.43	+2.296	22 32.4	11 22.7

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	*i*.	*f*.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
July 1	0.5003	+34.45	1.2079	338 7	1.3095	170 41	0.1559	+1.43	+2.296	22 32.4	11 22.7
2	.5030	34.62	1.2097	338 12	1.3093	169 48	0.1946	1.57	2.308	22 32.8	11 19.2
3	.5058	34.79	1.2116	338 18	1.3091	168 55	0.2299	1.70	2.319	22 33.2	11 15.7
4	.5085	34.95	1.2134	338 23	1.3088	168 3	0.2624	1.83	2.330	22 33.6	11 12.2
5	.5112	35.12	1.2152	388 29	1.3085	167 10	0.2926	1.96	2.342	22 33.9	11 8.6
(19h.0) 6	.5140	+35.29	1.2170	338 34	1.3083	166 17	0.3210	+2.09	+2.353	22 34.2	11 5.1
7	.5167	35.46	1.2188	338 39	1.3080	165 24	0.3477	2.23	2.364	22 34.6	11 1.6
8	.5195	35.62	1.2206	338 43	1.3077	164 30	0.3723	2.36	2.375	22 34.9	10 58.0
9	.5222	35.79	1.2224	338 48	1.3074	163 37	0.3950	2.48	2.386	22 35.2	10 54.5
10	.5249	35.95	1.2242	338 52	1.3070	162 44	0.4169	2.61	2.397	22 35.5	10 50.9
11	.5277	+36.12	1.2260	338 56	1.3067	161 50	0.4377	+2.74	+2.408	22 35.8	10 47.3
12	.5304	36.28	1.2277	339 1	1.3063	160 57	0.4573	2.87	2.419	22 36.1	10 43.8
13	.5332	36.44	1.2295	339 5	1.3059	160 3	0.4762	2.99	2.430	22 36.3	10 40.2
14	.5359	36.61	1.2312	339 9	1.3055	159 9	0.4940	3.12	2.440	22 36.6	10 36.6
15	.5386	36.77	1.2329	339 12	1.3051	158 15	0.5110	3.24	2.451	22 36.8	10 33.0
16	.5414	+36.93	1.2346	339 16	1.3046	157 21	0.5273	+3.37	+2.462	22 37.1	10 29.4
17	.5441	37.09	1.2363	339 19	1.3042	156 27	0.5430	3.49	2.472	22 37.3	10 25.8
18	.5468	37.25	1.2380	339 23	1.3037	155 33	0.5580	3.61	2.483	22 37.5	10 22.2
19	.5496	37.40	1.2397	339 26	1.3032	154 39	0.5722	3.73	2.493	22 37.7	10 18.6
20	.5523	37.56	1.2414	339 29	1.3027	153 44	0.5859	3.85	2.504	22 37.9	10 15.0
(20h.0) 21	.5551	+37.71	1.2430	339 32	1.3023	152 50	0.5991	+3.97	+2.514	22 38.1	10 11.3
22	.5578	37.86	1.2447	339 35	1.3018	151 55	0.6118	4.09	2.524	22 38.3	10 7.7
23	.5605	38.02	1.2463	339 38	1.3012	151 1	0.6240	4.21	2.534	22 38.5	10 4.0
24	.5633	38.17	1.2479	339 40	1.3007	150 6	0.6357	4.32	2.544	22 38.7	10 0.4
25	.5660	38.32	1.2495	339 43	1.3001	149 10	0.6470	4.44	2.554	22 38.9	9 56.7
26	.5687	+38.47	1.2510	339 45	1.2996	148 15	0.6580	+4.55	+2.564	22 39.0	9 53.0
27	.5715	38.62	1.2526	339 48	1.2990	147 20	0.6686	4.66	2.574	22 39.2	9 49.3
28	.5742	38.76	1.2542	339 50	1.2984	146 24	0.6788	4.77	2.584	22 39.3	9 45.6
29	.5769	38.91	1.2557	339 52	1.2979	145 29	0.6886	4.88	2.594	22 39.5	9 41.9
30	.5797	39.06	1.2572	339 54	1.2973	144 33	0.6982	4.99	2.604	22 39.6	9 38.2
31	.5824	39.20	1.2587	339 56	1.2967	143 37	0.7073	5.10	2.613	22 39.8	9 34.4
Aug. 1	.5852	+39.34	1.2602	339 58	1.2961	142 40	0.7162	+5.20	+2.623	22 39.9	9 30.7
2	.5879	39.48	1.2617	340 0	1.2955	141 44	0.7248	5.31	2.632	22 40.0	9 26.9
3	.5906	39.62	1.2631	340 2	1.2949	140 47	0.7331	5.41	2.642	22 40.1	9 23.2
4	.5934	39.76	1.2645	340 4	1.2943	139 51	0.7410	5.51	2.651	22 40.3	9 19.4
(21h.0) 5	.5961	39.90	1.2660	340 5	1.2937	138 53	0.7489	5.61	2.660	22 40.4	9 15.6
6	.5988	+40.04	1.2674	340 7	1.2930	137 57	0.7564	+5.71	+2.669	22 40.5	9 11.8
7	.6016	40.17	1.2688	340 9	1.2924	137 0	0.7636	5.80	2.678	22 40.6	9 7.9
8	.6043	40.30	1.2701	340 10	1.2918	136 2	0.7707	5.90	2.687	22 40.7	9 4.1
9	.6071	40.44	1.2715	340 12	1.2911	135 4	0.7776	5.99	2.696	22 40.8	9 0.3
10	.6098	40.57	1.2728	340 13	1.2905	134 6	0.7841	6.08	2.704	22 40.9	8 56.4
11	.6125	+40.70	1.2741	340 15	1.2899	133 8	0.7904	+6.17	+2.713	22 41.0	8 52.5
12	.6153	40.82	1.2754	340 16	1.2892	132 10	0.7966	6.26	2.722	22 41.1	8 48.6
13	.6180	40.95	1.2767	340 17	1.2886	131 11	0.8025	6.35	2.730	22 41.2	8 44.7
14	.6207	41.08	1.2780	340 19	1.2880	130 13	0.8082	6.43	2.739	22 41.3	8 40.8
15	.6235	41.20	1.2793	340 20	1.2874	129 14	0.8138	6.51	2.747	22 41.4	8 36.9
16	.6262	+41.33	1.2805	340 22	1.2868	128 15	0.8192	+6.59	+2.755	22 41.4	8 32.9
17	.6290	41.45	1.2817	340 23	1.2862	127 16	0.8244	6.67	2.763	22 41.5	8 29.0
18	.6317	41.57	1.2830	340 24	1.2855	126 16	0.8294	6.75	2.771	22 41.6	8 25.1
19	.6344	41.69	1.2841	340 26	1.2849	125 17	0.8341	6.82	2.779	22 41.7	8 21.1
20	.6372	41.81	1.2853	340 27	1.2843	124 17	0.8388	6.90	2.787	22 41.8	8 17.1
(22h.0) 21	.6399	+41.92	1.2865	340 28	1.2838	123 17	0.8433	+6.97	+2.795	22 41.9	8 13.1
22	.6426	42.04	1.2876	340 30	1.2832	122 17	0.8477	7.04	2.803	22 42.0	8 9.1
23	.6454	42.16	1.2887	340 31	1.2826	121 16	0.8518	7.11	2.810	22 42.1	8 5.1
24	.6481	42.27	1.2898	340 33	1.2821	120 16	0.8558	7.17	2.818	22 42.2	8 1.1
25	.6509	42.38	1.2909	340 34	1.2815	119 15	0.8597	7.24	2.826	22 42.3	7 57 0
26	.6536	+42.50	1.2920	340 35	1.2810	118 14	0.8634	+7.30	+2.833	22 42.3	7 52.9
27	.6563	42.61	1.2931	340 37	1.2804	117 13	0.8669	7.36	2.841	22 42.4	7 48.9
28	.6591	42.72	1.2942	340 38	1.2799	116 12	0.8702	7.41	2.848	22 42.5	7 44.8
29	.6618	42.83	1.2952	340 40	1.2794	115 11	0.8735	7.47	2.855	22 42.6	7 40.7
30	.6646	42.94	1.2962	340 41	1.2790	114 9	0.8766	7.53	2.862	22 42.7	7 36.6
31	0.6673	+43.04	1.2972	340 43	1.2785	113 7	0.8795	+7.58	+2.870	22 42.8	7 32.5

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.•	H.
	y	″		° ′		° ′		″	s	h m	h m
Sept. 1	0.6700	+43.15	1.2982	340 44	1.2781	112 6	0.8823	+7.63	+2.877	22 43.0	7 28.4
2	.6728	43.25	1.2992	340 46	1.2776	111 4	0.8849	7.67	2.884	22 43.1	7 24.2
3	.6755	43.36	1.3002	340 48	1.2772	110 1	0.8875	7.72	2.891	22 43.2	7 20.1
h 4	.6783	43.46	1.3012	340 50	1.2768	108 59	0.8899	7.76	2.898	22 43.3	7 15.9
(23.0) 5	.6810	43.57	1.3021	340 51	1.2764	107 57	0.8922	7.80	2.904	22 43.4	7 11.8
6	.6837	+43.67	1.3031	340 53	1.2760	106 54	0.8943	+7.84	+2.911	22 43.5	7 7.6
7	.6865	43.77	1.3040	340 55	1.2757	105 51	0.8963	7.87	2.918	22 43.7	7 3.4
8	.6892	43.87	1.3049	340 57	1.2754	104 49	0.8982	7.91	2.925	22 43.8	6 59.2
9	.6919	43.97	1.3058	340 59	1.2751	103 46	0.8999	7.94	2.931	22 44.0	6 55.0
10	.6947	44.07	1.3067	341 1	1.2748	102 43	0.9015	7.97	2.938	22 44.1	6 50.8
11	.6974	+44.17	1.3076	341 4	1.2745	101 39	0.9029	+8.00	+2.945	22 44.2	6 46.6
12	.7002	44.27	1.3084	341 6	1.2743	100 36	0.9043	8.02	2.951	22 44.4	6 42.4
13	.7029	44.37	1.3093	341 8	1.2741	99 32	0.9054	8.04	2.958	22 44.5	6 38.2
14	.7056	44.46	1.3102	341 11	1.2739	98 29	0.9065	8.06	2.964	22 44.7	6 33.9
15	.7084	44.56	1.3110	341 13	1.2737	97 25	0.9075	8.08	2.971	22 44.9	6 29.7
16	.7111	+44.66	1.3118	341 16	1.2735	96 22	0.9083	+8.10	+2.977	22 45.1	6 25.4
17	.7138	44.75	1.3127	341 19	1.2734	95 18	0.9090	8.11	2.984	22 45.3	6 21.2
18	.7166	44.85	1.3135	341 22	1.2733	94 14	0.9096	8.12	2.990	22 45.4	6 16.9
h 19	.7193	44.95	1.3143	341 24	1.2732	93 10	0.9100	8.13	2.997	22 45.6	6 12.6
(0.0) 20	.7221	45.04	1.3150	341 27	1.2732	92 6	0.9103	8.13	3.003	22 45.8	6 8.4
21	.7248	+45.14	1.3158	341 30	1.2731	91 2	0.9105	+8.14	+3.009	22 46.0	6 4.1
22	.7275	45.24	1.3167	341 33	1.2731	89 58	0.9106	8.14	3.016	22 46.2	5 59.8
23	.7303	45.33	1.3175	341 37	1.2731	88 54	0.9105	8.14	3.022	22 46.4	5 55.6
24	.7330	45.43	1.3182	341 40	1.2732	87 49	0.9103	8.13	3.029	22 46.6	5 51.3
25	.7358	45.52	1.3190	341 43	1.2732	86 45	0.9100	8.13	3.035	22 46.9	5 47.0
26	.7385	+45.62	1.3198	341 47	1.2733	85 41	0.9096	+8.12	+3.041	22 47.1	5 42.8
27	.7412	45.72	1.3206	341 50	1.2734	84 37	0.9090	8.11	3.048	22 47.4	5 38.5
28	.7440	45.81	1.3214	341 54	1.2735	83 33	0.9082	8.10	3.054	22 47.6	5 34.2
29	.7467	45.91	1.3221	341 58	1.2737	82 29	0.9074	8.08	3.061	22 47.9	5 29.9
30	.7494	46.01	1.3229	342 2	1.2739	81 24	0.9065	8.06	3.067	22 48.1	5 25.6
Oct. 1	.7522	+46.11	1.3237	342 6	1.2741	80 20	0.9054	+8.04	+3.074	22 48.4	5 21.3
2	.7549	46.21	1.3244	342 10	1.2743	79 16	0.9041	8.02	3.080	22 48.7	5 17.1
3	.7576	46.31	1.3252	342 14	1.2745	78 12	0.9027	7.99	3.087	22 48.9	5 12.8
h 4	.7604	46.40	1.3259	342 18	1.2748	77 8	0.9012	7.97	3.094	22 49.2	5 8.5
(1.0) 5	.7631	46.50	1.3267	342 22	1.2751	76 4	0.8996	7.94	3.100	22 49.5	5 4.3
6	.7659	+46.60	1.3274	342 27	1.2754	75 0	0.8978	+7.90	+3.107	22 49.8	5 0.0
7	.7686	46.70	1.3282	342 31	1.2757	73 56	0.8958	7.87	3.114	22 50.1	4 55.7
8	.7713	46.80	1.3290	342 36	1.2761	72 52	0.8938	7.83	3.120	22 50.4	4 51.5
9	.7741	46.91	1.3297	342 40	1.2765	71 49	0.8917	7.79	3.127	22 50.7	4 47.3
10	.7768	47.01	1.3305	342 45	1.2769	70 45	0.8893	7.75	3.134	22 51.0	4 43.0
11	.7795	+47.12	1.3313	342 50	1.2773	69 42	0.8869	+7.70	+3.141	22 51.3	4 38.8
12	.7823	47.22	1.3320	342 55	1.2777	68 38	0.8843	7.65	3.148	22 51.7	4 34.5
13	.7850	47.32	1.3328	343 0	1.2782	67 35	0.8815	7.61	3.155	22 52.0	4 30.3
14	.7878	47.43	1.3336	343 5	1.2786	66 32	0.8785	7.56	3.162	23 52.3	4 26.1
15	.7905	47.54	1.3344	343 10	1.2791	65 28	0.8755	7.51	3.169	22 52.7	4 21.9
16	.7932	+47.65	1.3352	343 15	1.2796	64 25	0.8723	+7.45	+3.176	22 53.0	4 17.7
17	.7960	47.75	1.3360	343 21	1.2801	63 22	0.8688	7.39	3.184	22 53.4	4 13.5
18	.7987	47.87	1.3368	343 26	1.2806	62 19	0.8653	7.33	3.191	22 53.7	4 9.3
h 19	.8015	47.98	1.3376	343 32	1.2812	61 17	0.8616	7.27	3.198	22 54.1	4 5.1
(2.0) 20	.8042	48.09	1.3384	343 37	1.2817	60 14	0.8577	7.21	3.206	22 54.5	4 0.9
21	.8069	+48.20	1.3392	343 43	1.2823	59 11	0.8537	+7.14	+3.214	22 54.8	3 56.7
22	.8097	48.32	1.3400	343 48	1.2829	58 9	0.8495	7.07	3.221	22 55.2	3 52.6
23	.8124	48.43	1.3409	343 54	1.2835	57 6	0.8451	7.00	3.229	22 55.6	3 48.4
24	.8151	48.55	1.3417	344 0	1.2841	56 4	0.8405	6.93	3.237	22 56.0	3 44.3
25	.8179	48.67	1.3426	344 6	1.2847	55 2	0.8357	6.85	3.245	22 56.4	3 40.2
26	.8206	48.79	1.3434	344 11	1.2853	54 0	0.8308	6.77	3.253	22 56.7	3 36.0
27	.8234	+48.91	1.3443	344 17	1.2859	52 59	0.8256	+6.69	+3.261	22 57.1	3 31.9
28	.8261	49.03	1.3452	344 23	1.2865	51 57	0.8203	6.61	3.269	22 57.5	3 27.8
29	.8288	49.16	1.3461	344 29	1.2871	50 56	0.8147	6.53	3.277	22 57.9	3 23.7
30	.8316	49.28	1.3470	344 35	1.2878	49 55	0.8089	6.44	3.286	22 58.3	3 19.6
31	.8343	49.41	1.3479	344 41	1.2885	48 54	0.8030	6.35	3.294	22 58.8	3 15.6
32	0.8371	+49.54	1.3488	344 47	1.2891	47 53	0.7968	+6.26	+3.303	22 59.2	3 11.5

FOR WASHINGTON MEAN MIDNIGHT.

QUANTITIES FOR REDUCING MEAN PLACES, 1878.0, TO APPARENT PLACES.

Solar day. Sid. hour.	τ.	f.	Log g.	G.	Log h.	H.	Log i.	i.	f.	G.	H.
	y	″		° ′		° ′		″	s	h m	h m
Nov. 1	0.8371	+49.54	1.3488	344 47	1.2891	47 53	0.7968	+6.26	+3.303	22 59.2	3 11.5
2	.8398	49.67	1.3497	344 53	1.2898	46 52	0.7904	6.17	3.311	22 59.6	3 7.5
3	.8425	49.80	1.3506	345 0	1.2905	45 51	0.7837	6.08	3.320	23 0.0	3 3.4
h 4	.8453	49.93	1.3516	345 6	1.2911	44 50	0.7768	5.98	3.329	23 0.4	2 59.4
(3.0) 5	.8480	50.06	1.3525	345 12	1.2918	43 50	0.7696	5.88	3.337	23 0.8	2 55.4
6	.8507	+50.20	1.3535	345 18	1.2924	42 50	0.7622	+5.78	+3.346	23 1.2	2 51.3
7	.8535	50.33	1.3545	345 24	1.2931	41 50	0.7546	5.68	3.355	23 1.6	2 47.3
8	.8562	50.47	1.3555	345 30	1.2937	40 50	0.7466	5.58	3.365	23 2.0	2 43.4
9	.8590	50.61	1.3565	345 36	1.2944	39 51	0.7384	5.47	3.374	23 2.4	2 39.4
10	.8617	50.75	1.3575	345 42	1.2950	38 51	0.7299	5.37	3.384	23 2.8	2 35.4
11	.8644	+50.89	1.3585	345 48	1.2957	37 52	0.7210	+5.26	+3.393	23 3.2	2 31.4
12	.8672	51.04	1.3596	345 54	1.2963	36 52	0.7119	5.15	3.403	23 3.6	2 27.5
13	.8699	51.18	1.3606	346 0	1.2969	35 53	0.7024	5.04	3.412	23 4.0	2 23.6
14	.8726	51.33	1.3617	346 6	1.2975	34 54	0.6925	4.93	3.422	23 4.4	2 19.6
15	.8754	51.48	1.3627	346 12	1.2982	33 55	0.6823	4.81	3.432	23 4.8	2 15.7
16	.8781	+51.63	1.3638	346 18	1.2988	32 57	0.6716	+4.69	+3.442	23 5.2	2 11.8
17	.8809	51.78	1.3649	346 24	1.2994	31 58	0.6606	4.58	3.452	23 5.6	2 7.9
18	.8836	51.93	1.3660	346 30	1.3000	31 0	0.6491	4.46	3.462	23 6.0	2 4.0
h 19	.8863	52.09	1.3671	346 35	1.3006	30 1	0.6372	4.34	3.472	23 6.4	2 0.1
(4.0) 20	.8891	52.24	1.3682	346 41	1.3012	29 3	0.6247	4.21	3.483	23 6.7	1 56.2
21	.8918	+52.40	1.3693	346 47	1.3017	28 5	0.6118	+4.09	+3.493	23 7.1	1 52.3
22	.8945	52.55	1.3705	346 52	1.3022	27 7	0.5983	3.97	3.504	23 7.5	1 48.5
23	.8973	52.71	1.3716	346 58	1.3028	26 10	0.5844	3.84	3.515	23 7.9	1 44.6
24	.9000	52.87	1.3728	347 4	1.3033	25 12	0.5697	3.71	3.525	23 8.2	1 40.8
25	.9028	53.03	1.3739	347 9	1.3038	24 14	0.5544	3.58	3.536	23 8.6	1 36.9
26	.9055	+53.20	1.3751	347 14	1.3043	23 17	0.5385	+3.45	+3.546	23 9.0	1 33.1
27	.9082	53.36	1.3763	347 20	1.3047	22 20	0.5217	3.32	3.557	23 9.3	1 29.3
28	.9110	53.52	1.3775	347 25	1.3052	21 22	0.5041	3.19	3.568	23 9.7	1 25.5
29	.9137	53.69	1.3787	347 30	1.3056	20 25	0.4857	3.06	3 579	23 10.0	1 21.7
30	.9165	53.86	1.3799	347 35	1.3061	19 28	0.4663	2.93	3.591	23 10.3	1 17.9
Dec. 1	.9192	+54.03	1.3811	347 40	1.3065	18 31	0.4458	+2.79	+3.602	23 10.7	1 14.1
2	.9219	54.19	1.3824	347 45	1.3069	17 34	0.4241	2.66	3.613	23 11.0	1 10.3
3	.9247	54.36	1.3836	347 50	1.3072	16 37	0.4011	2.52	3.625	23 11 3	1 6.5
h 4	.9274	54.53	1.3848	347 55	1.3076	15 41	0.3767	2.38	3.636	23 11.6	1 2.7
(5.0) 5	.9301	54.70	1.3860	347 59	1.3079	14 44	0.3506	2.24	3.647	23 11.9	0 58.9
6	.9329	+54.88	1.3873	348 4	1.3082	13 47	0.3228	+2.10	+3.658	23 12.2	0 55.2
7	.9356	55.05	1.3885	348 8	1.3085	12 51	0.2929	1.96	3.670	23 12.5	0 51.4
8	.9383	55.22	1.3898	348 12	1.3088	11 54	0.2606	1.82	3.682	23 12.8	0 47.6
9	.9411	55.40	1.3910	348 16	1.3091	10 58	0.2257	1.68	3.693	23 13.1	0 43.9
10	.9438	55.57	1.3923	348 21	1.3093	10 2	0.1876	1.54	3.705	23 13.4	0 40.1
11	.9466	+55.75	1.3936	348 25	1.3096	9 6	0.1455	+1.40	+3.717	23 13.6	0 36.4
12	.9493	55.93	1.3948	348 28	1.3098	8 9	0.0987	1.25	3.729	23 13.9	0 32.6
13	.9520	56.10	1.3961	348 32	1.3099	7 13	0.0460	1.11	3.740	23 14.2	0 28.9
14	.9548	56.28	1.3974	348 36	1.3101	6 17	9.9858	0.97	3.752	23 14.4	0 25.1
15	.9575	56.46	1.3986	348 40	1.3102	5 21	9.9157	0.82	3.764	23 14.6	0 21.4
16	.9602	+56.64	1.3999	348 43	1.3103	4 25	9.8320	+0.68	+3.776	23 14.9	0 17.7
17	.9630	56.81	1.4012	348 47	1.3104	3 29	9.7274	0.53	3.788	23 15.1	0 13.9
18	.9657	56.99	1.4025	348 50	1.3105	2 33	9.5881	0.39	3.800	23 15.3	0 10.2
h 19	.9685	57.17	1.4038	348 53	1.3106	1 37	9.3976	0.25	3.811	23 15.5	0 6.5
(6.0) 20	.9712	57.35	1.4051	348 56	1.3106	0 41	p9.0414	+0.11	3.823	23 15.7	0 2.7
21	.9740	+57.53	1.4063	348 59	1.3106	359 44	n8.4771	-0.03	+3.835	23 15.9	23 59.0
22	.9767	57.71	1.4076	349 2	1.3106	358 49	9.2304	0.17	3.847	23 16.1	23 55.2
23	.9794	57.88	1.4089	349 5	1.3105	357 52	9.5086	0.32	3.859	23 16.3	23 51.5
24	.9822	58.06	1.4101	349 7	1.3105	356 56	9.6713	0.47	3.871	23 16.5	23 47.8
25	.9849	58.24	1.4114	349 10	1.3104	356 0	9.7885	0.61	3.883	23 16.7	23 44.0
26	.9876	58.42	1.4127	349 12	1.3103	355 4	9.8806	0.76	3.895	23 16.8	23 40.3
27	.9904	+58.60	1.4139	349 15	1.3102	354 8	n9.9562	-0.90	+3.906	23 17.0	23 36.5
28	.9931	58.77	1.4152	349 17	1.3100	353 11	0.0204	1.05	3.918	23 17.1	23 32.8
29	.9958	58.95	1.4164	349 19	1.3099	352 15	0.0763	1.19	3.930	23 17.2	23 29.0
30	.9986	59.13	1.4177	349 21	1.3097	351 19	0.1255	1.34	3.942	23 17.4	23 25.3
31	.0013	59.30	1.4189	349 23	1.3095	350 23	0.1696	1.47	3.954	23 17.5	23 21.5
32	0.0041	+59.48	1.4202	349 24	1.3092	349 26	n0.2096	-1.62	+3.965	23 17.6	23 17.7

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$A = \tau - 0.34245 \sin \Omega + 0.00410 \sin 2\,\Omega - 0.02519 \sin 2\odot + 0.00293 \sin (\odot + 82^\circ\ 13')$.
$B = -9''.2238 \cos \Omega + 0''.0895 \cos 2\,\Omega - 0''.5507 \cos 2\odot - 0''.0092 \cos (\odot + 280^\circ\ 50')$.
$C = -20''.4451 \cos \omega \cos \odot$.
$D = -20''.4451 \sin \odot$.
$E = -0''.0464 \sin \Omega + 0''.0014 \sin 2\,\Omega - 0''.0033 \sin 2\odot$.

$a = 3^{s}.07230 + 1^{s}.33693 \sin \alpha \tan \delta$.
$b = \frac{1}{15} \cos \alpha \tan \delta$.
$c = \frac{1}{15} \cos \alpha \sec \delta$.
$d = \frac{1}{15} \sin \alpha \sec \delta$.

$a' = 20''.0540 \cos \alpha$.
$b' = - \sin \alpha$.
$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta$.
$d' = \cos \alpha \sin \delta$.

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.
τ = the time reckoned from Jan. $0-\overset{\mathrm{d}}{.}226$, (when the sun's mean longitude is 280°,) expressed in fractional parts of a tropical year.
$\odot$ = the sun's true longitude.
Ω = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu$. (in time)
$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'$. (in arc)

The following formulæ may also be used by putting

$f = 46''.0845\, A + E = 3^{s}.07230\, A + \frac{1}{15} E$. $\quad i = C \tan \omega$.
$g \cos G = 20''.0540\, A$. $\quad h \sin H = C$.
$g \sin G = B$. $\quad h \cos H = D$.

$\alpha' - \alpha = f + \tau \mu + g \sin (G + \alpha) \frac{\tan \delta}{15} + h \sin (H + \alpha) \frac{\sec \delta}{15}$. (in time)
$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta$. (in arc)

A and B include also the following small terms of nutation, the combined values of which in 1878 are given in Table V. of the Appendix.

$\triangle A = +.00025 \sin (2\odot - \Omega) + .00009 \sin (2\Gamma' - \Omega)$.
$+.00010 \sin 2 (\odot - \Gamma') + .00005 \cos \Gamma'$.
$-.00005 \sin 2 (\odot - \Omega) + .00004 \sin 2\Gamma'$.
$-.00011 \sin (3\odot - \Gamma)$.

$\triangle B = +\overset{''}{0}.0067 \cos (2\odot - \Omega)$.
$-0.0027 \cos (3\odot - \Gamma)$.
$+0.0024 \cos (2\Gamma' - \Omega)$.
$-0.0023 \sin \Gamma'$.
$+0.0008 \sin 2\Gamma'$.

Table IV. of the Appendix contains the following terms:

$\mathcal{A}_{☾} = -.00405 \sin 2\,☾$. $\quad \mathcal{B}_{☾} = -0''.0885 \cos 2\,☾$.
$\mathcal{A}'_{☾} = +.00135 \sin (☾ - \Gamma')$.

Tables VI. and VII. facilitate finding the corresponding reductions of Right Ascensions and Declinations. In these terms:

$☾$ = the moon's mean longitude.
Γ = the longitude of the sun's perigee.
Γ' = the longitude of the moon's perigee.

Other terms, which become sensible for stars very near the pole, will be found on page 487.

MEAN PLACES FOR 1878.0. (Jan. 0—$\overset{d}{.}$226, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Andromedæ	2	0 2 5.000	+ 3.089	+28 25 1.40	+19.90
γ Pegasi (*Algenib*)	3.2	0 6 57.282	3.083	+14 30 19.69	20.05
* β Hydri	3	0 19 18.638	3.247	−77 56 32.47	20.24
α Cassiopeæ	var.	0 33 35.607	3.368	+55 52 4.45	19.79
β Ceti	2	0 37 27.847	3.013	−18 39 23.08	19.82
* 21 Cassiopeæ	6	0 37 37.036	+ 3.839	+74 19 12.94	+19.73
ε Piscium	4	0 56 36.751	3.109	+ 7 13 58.89	19.47
* α Ursæ Min. (*Polaris*)	2	1 14 3.455	21.328	+88 39 30.90	19.02
θ¹ Ceti	3	1 17 55.526	2.998	− 8 48 46.82	18.71
* 38 Cassiopeæ	6	1 22 10.490	4.361	+69 38 9.00	18.69
η Piscium	4.3	1 24 57.321	+ 3.200	+14 42 59.94	+18.71
α Eridani (*Achernar*)	1	1 33 9.899	2.234	−57 51 24.19	18.40
ο Piscium	4	1 38 57.208	3.162	+ 8 32 35.15	18.25
β Arietis	3.2	1 47 54.142	3.302	+20 12 40.36	17.78
* 50 Cassiopeæ	4	1 53 2.831	4.990	+71 49 45.78	17.66
α Arietis	2	2 0 17.899	+ 3.370	+22 53 5.66	+17.22
ξ¹ Ceti	4.5	2 6 32.020	3.170	+ 8 16 24.95	17.06
* ι Cassiopeæ	4	2 19 1.890	4.848	+66 51 7.58	16.46
γ Ceti	3.4	2 36 58.806	3.103	+ 2 43 14.86	15.38
α Ceti	2.3	2 55 54.169	3.130	+ 3 36 35.98	14.34
* 48 Cephei (H.)	6	3 4 54.047	+ 7.367	+77 16 59.67	+13.81
ζ Arietis	4.5	3 7 53.457	3.438	+20 35 29.07	13.63
α Persei	2	3 15 37.118	4.251	+49 25 30.38	13.14
δ Persei	3	3 34 14.495	4.242	+47 23 43.61	11.86
η Tauri	3	3 40 14.028	3.555	+23 43 35.27	11.44
ζ Persei	3	3 46 27.925	+ 3.758	+31 31 10.90	+11.01
γ¹ Eridani	3	3 52 20.253	2.797	−13 51 23.10	10.51
γ Tauri	4	4 12 51.093	3.408	+15 19 54.24	9.03
ε Tauri	4.3	4 21 29.620	3.496	+18 54 30.76	8.35
α Tauri (*Aldebaran*)	1	4 28 55.280	3.436	+16 15 45.76	7.59
* 9 Camelopardalis	4	4 41 55.761	+ 5.917	+66 7 57.46	+ 6.70
ι Aurigæ	3	4 49 2.995	3.897	+32 58 16.41	6.09
11 Orionis	5	4 57 35.974	3.426	+15 13 57.94	5.38
α Aurigæ (*Capella*)	1	5 7 40.712	4.424	+45 52 18.13	4.11
β Orionis (*Rigel*)	1	5 8 40.503	2.881	− 8 20 38.14	4.45
β Tauri	2	5 18 34.816	+ 3.788	+28 30 9.07	+ 3.43
* Groombridge 966	6.7	5 23 25.595	7.992	+74 57 31.19	3.18
δ Orionis	2	5 25 46.486	3.065	− 0 23 27.71	2.98
α Leporis	3	5 27 21.053	2.647	−17 54 38.52	2.87
ε Orionis	2	5 30 1.390	3.043	− 1 16 52.60	2.62
α Columbæ	2	5 35 13.957	+ 2.172	−34 8 23.76	+ 2.14
α Orionis	var.	5 48 34.044	3.247	+ 7 22 58.02	+ 1.01
* 22 Camelopardalis (H.)	5.4	6 5 23.789	6.618	+69 21 33.88	− 0.58
μ Geminorum	3	6 15 34.825	3.632	+22 34 28.41	1.47
α Argus (*Canopus*)	1	6 21 14.722	1.330	−52 37 46.84	1.86
γ Geminorum	2.3	6 30 39.867	+ 3.469	+16 30 6.98	− 2.70
α Canis Maj. (*Sirius*)	1	6 39 46.289	2.646	−16 32 59.63	4.67
* 51 Cephei (H.)	5	6 42 45.044	30.172	+87 13 53.33	3.77
ε Canis Majoris	2.1	6 53 49.954	2.359	−28 48 25.62	4.67
δ Canis Majoris	2	7 3 25.912	+ 2.439	−26 12 0.55	− 5.44

* Circumpolar Stars.

MEAN PLACES FOR 1878.0. (Jan. 0—.226, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
δ Geminorum . . .	3.4	7 12 50.206	+ 3.591	+22 12 19.81	− 6.26
* Piazzi vii. 67. . .	6	7 18 10.351	6.307	+68 42 41.42	6.79
α Geminor. (*Castor*) .	2.1	7 26 48.562	3.839	+32 9 15.41	7.49
α Can. Min. (*Procyon*)	1	7 32 54.997	3.146	+ 5 32 10.08	8.95
β Geminor. (*Pollux*) .	1.2	7 37 50.957	3.681	+28 19 9.99	8.35
φ Geminorum . . .	5	7 46 1.827	+ 3.684	+27 4 48.20	− 8.97
* 3 Ursæ Majoris (H.) .	6	8 0 39.166	6.062	+68 49 49.41	10.10
15 Argus (ι)	3	8 2 20.995	2.556	−23 57 12.20	10.13
ε Hydræ	3.4	8 40 18.935	3.183	+ 6 51 55.98	12.94
ι Ursæ Majoris . .	3	8 50 50.844	4.138	+48 31 8.75	13.87
* σ² Ursæ Majoris . .	5	8 59 38.168	+ 5.369	+67 37 38.65	−14.26
κ Cancri	5	9 1 8.276	3.255	+11 9 30.12	14.23
ι Argus	2	9 13 49.360	1.601	−58 45 46.48	14.94
* 1 Draconis (H.) . .	4.5	9 19 33.264	9.089	+81 51 47.93	15.34
α Hydræ	2	9 21 35.551	2.950	− 8 7 49.69	15.41
* d Ursæ Majoris . .	5.4	9 23 39.804	+ 5.419	+70 21 53.04	−15.52
θ Ursæ Majoris . .	3	9 24 41.237	4.048	+52 13 55.78	16.18
ε Leonis	3	9 38 55.477	3.418	+24 20 7.04	16.38
μ Leonis	4	9 45 49.320	3.424	+26 34 50.88	16.76
α Leonis (*Regulus*) .	1.2	10 1 52.459	3.202	+12 33 47.13	17.43
* 32 Ursæ Majoris . .	6	10 9 9.322	+ 4.434	+65 42 56.64	−17.79
γ¹ Leonis	2	10 13 14.661	3.317	+20 27 29.99	18.04
* 9 Draconis (H.) . .	5.4	10 24 40.929	5.294	+76 20 24.90	18.37
ρ Leonis	4	10 26 23.253	3.166	+ 9 56 2.21	18.41
η Argus	2	10 40 19.843	2.311	−59 2 32.81	18.77
l Leonis	5	10 42 50.609	+ 3.160	+11 11 26.20	−18.93
α Ursæ Majoris . .	2	10 56 11.103	3.756	+62 24 32.54	19.36
δ Leonis	2.3	11 7 37.168	3.202	+21 11 31.53	19.66
δ Crateris	3.4	11 13 14.549	2.997	−14 7 6.04	19.44
τ Leonis	5	11 21 39.818	3.088	+ 3 31 41.17	19.78
* λ Draconis	3.4	11 24 8.468	+ 3.634	+70 0 13.44	−19.87
υ Leonis	5.4	11 30 42.182	3.072	− 0 9 0.38	19.84
β Leonis	3	11 42 50.169	3.065	+15 15 15.59	20.09
γ Ursæ Majoris . .	2.3	11 47 24.411	3.186	+54 22 22.93	20.03
ο Virginis	4	11 58 59.694	3.059	+ 9 24 39.12	20.01
* 4 Draconis (H.) . .	5 4	12 6 28.079	+ 2.900	+78 17 37.51	−20.06
* β Chamæleontis . .	5	12 11 12.697	3.354	−78 38 6.29	20.04
η Virginis	3.4	12 13 39.891	3.068	+ 0 0 41.53	20.03
α¹ Crucis	1	12 19 48.836	3.270	−62 25 17.61	19.93
β Corvi	2.3	12 27 58.850	3.139	−22 43 16.91	19.94
* κ Draconis	3.4	12 28 16.088	+ 2.597	+70 27 37.67	−19.93
* 32 Camelop. (H.) (*foll.*)	5.4	12 48 14.886	0.368	+84 4 32.11	19.63
12 Canum Venaticorum.	3	12 50 19.135	2.816	+38 58 39.84	19.51
θ Virginis	4.5	13 3 38.088	3.101	− 4 53 13.16	19.31
α Virginis (*Spica*) .	1	13 18 46.062	3.154	−10 31 25.31	18.90
ζ Virginis	3.4	13 28 28.655	+ 3.053	+ 0 1 43.71	−18.51
η Ursæ Majoris . .	2	13 42 43.977	2.374	+49 55 21.66	18.09
η Bootis	3	13 48 52.597	2.859	+19 0 37.07	18.17
β Centauri	1	13 55 13.575	4.168	−59 47 0.82	17.65
* α Draconis	3.4	14 1 5.249	+ 1.623	+64 57 31.53	−17.35

* Circumpolar Stars.

MEAN PLACES FOR 1878.0. (Jan. $0-\overset{\mathrm{d}}{.}226$, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
α Bootis (*Arcturus*) .	1	14 10 5.817	+ 2.734	+19 49 7.46	−18.87
θ Bootis	4.3	14 21 2.574	+ 2.043	+52 24 55.35	16.77
* 5 Ursæ Minoris . .	5.4	14 27 48.160	− 0.204	+76 14 16.26	16 05
α^2 Centauri	1	14 31 20.540	+ 4.039	−60 19 39.72	15.02
ε Bootis	2.3	14 39 39.575	+ 2.621	+27 35 22.67	15.35
α^2 Libræ	2.3	14 44 7.857	+ 3.308	−15 32 0.06	−15.18
* β Ursæ Minoris . .	2	14 51 4.664	− 0.242	+74 39 13.09	14.75
β Bootis	3	14 57 21.028	+ 2.260	+40 52 21.45	14.38
β Libræ	2	15 10 26.597	+ 3.221	− 8 55 52.10	13.52
μ^1 Bootis	4.3	15 19 52.966	+ 2.268	+37 48 21.88	12.80
* γ^2 Ursæ Minoris . .	3	15 20 56.063	− 0.142	+72 16 5.74	−12.80
α Coronæ Borealis .	2	15 29 31.372	+ 2.540	+27 7 35.73	12.31
α Serpentis	2.3	15 38 15.540	+ 3.951	+ 6 48 39.43	11.56
ε Serpentis	3.4	15 44 44.138	+ 2.987	+ 4 50 47.03	11.08
* ζ Ursæ Minoris . .	4.5	15 48 27.090	− 2.274	+78 10 8.22	10.90
ε Coronæ Borealis .	4	15 52 32.325	+ 2.485	+27 13 57.46	−10.62
δ Scorpii	2.3	15 53 7.283	+ 3.537	−22 16 20.32	10.54
β^1 Scorpii	2	15 58 20.653	+ 3.478	−19 28 11.44	10.17
* Groombridge 2320 .	6.5	16 5 59.532	+ 0.135	+68 7 53.95	9.50
δ Ophiuchi	3	16 7 57.168	+ 3.138	− 3 22 42.22	9.54
τ Herculis	3.4	16 16 4.307	+ 1.799	+46 36 16.85	− 8.76
α Scorpii (*Antares*) .	1.2	16 21 55.763	+ 3.669	−26 9 33.60	8.34
η Draconis	3.2	16 22 20.598	+ 0.806	+61 47 26.44	8.22
* A Draconis	5	16 28 13.821	− 0.139	+69 1 55.33	7.78
ζ Ophiuchi	3.2	16 30 26.515	+ 3.298	−10 19 4.71	7.59
* α Trianguli Australis.	2	16 35 45.839	+ 6.289	−68 48 2.64	− 7.28
η Herculis	3	16 38 42.826	+ 2.054	+39 9 20.25	7.03
κ Ophiuchi	3.4	16 51 53.582	+ 2.835	+ 9 33 59.32	5.85
d Herculis	5	16 57 5.953	+ 2.209	+33 44 47.02	5.40
* ε Ursæ Minoris . .	4.5	16 58 31.792	− 6.367	+82 14 6.87	5.32
α^1 Herculis	var.	17 9 5.081	+ 2.733	+14 31 51.69	− 4.37
44 Ophiuchi	5	17 18 55.214	+ 3.659	−24 3 37.82	3.66
β Draconis	3.2	17 27 40.531	+ 1.352	+52 23 31.85	2.83
α Ophiuchi	2	17 29 16.265	+ 2.782	+12 39 1.84	2.89
* ω Draconis	5	17 37 40.055	− 0.355	+68 48 48.98	1.66
μ Herculis	3.4	17 41 41.047	+ 2.345	+27 47 36.68	− 2.32
* ψ^1 Draconis (*pr.*) . .	4.5	17 44 6.640	− 1.082	+72 12 29.86	1.65
γ Draconis	2.3	17 53 46.551	+ 1.394	+51 30 13.68	0.58
γ^2 Sagittarii	3.4	17 57 58 282	+ 3.852	−30 25 24.92	− 0.40
μ^1 Sagittarii	4	18 6 28.029	+ 3.587	−21 5 19.30	+ 0.57
* δ Ursæ Minoris . .	4.5	18 11 41.040	−19.430	+86 36 30.73	+ 1.07
η Serpentis	3	18 14 59.744	+ 3.099	− 2 55 42.68	0.64
* σ Octantis	6	18 20 49.883	+108.421	−89 16 33.36	1.82
1 Aquilæ (3 H. Scuti)	4.5	18 28 34.019	+ 3.265	− 8 19 38.75	2.19
α Lyræ (*Vega*) . .	1	18 32 48.465	+ 2.031	+38 40 16.07	3.14
β Lyræ	var.	18 45 34.526	+ 2.214	+33 13 19.58	+ 3.95
σ Sagittarii . . .	2.3	18 47 42.009	+ 3.723	−26 26 45.65	4.08
* 50 Draconis	6	18 50 17.917	− 1.902	+75 17 19.77	4.42
ζ Aquilæ	3	18 59 48.069	+ 2.755	+13 41 1.38	5.09
d Sagittarii	5	19 10 29.745	+ 3.513	−19 10 2.28	+ 6.11

* Circumpolar Stars.

MEAN PLACES FOR 1878.0. (Jan. 0—$^{\text{d}}$.226, Washington.)

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
* δ Draconis	3	19 12 31.370	+ 0.032	+67 26 48.30	+ 6.30
* τ Draconis	5	19 17 53.387	− 1.110	+73 7 41.72	6.79
δ Aquilæ	3.4	19 19 20.755	+ 3.024	+ 2 52 23.64	6.90
κ Aquilæ	5	19 30 19.613	+ 3.230	− 7 17 48.01	7.72
γ Aquilæ	3	19 40 27.556	+ 2.852	+10 19 2.59	8.52
α Aquilæ (*Altair*) .	1.2	19 44 49.813	+ 2.928	+ 8 32 51.16	+ 9.24
* λ Ursæ Minoris . .	6.7	19 46 14.440	−61.544	+88 56 18.16	8.97
* ε Draconis	4	19 48 34.577	− 0.174	+69 57 24.41	9.15
β Aquilæ	4	19 49 19.191	+ 2.947	+ 6 6 12.68	8.74
τ Aquilæ	6.5	19 58 10.800	+ 2.933	+ 6 56 6.61	9.91
α^2 Capricorni . . .	3.4	20 11 17.033	+ 3.333	−12 55 17.08	+10.88
* κ Cephei	4.5	20 12 57.928	− 1.905	+77 20 34.14	10.99
α Pavonis	2	20 15 59.531	+ 4.791	−57 7 24.32	11.19
π Capricorni . . .	5	20 20 20.187	+ 3.440	−18 36 35.96	11.50
ε Delphini	4	20 27 23.019	+ 2.866	+10 53 23.61	12.00
* Groombridge 3241 .	6.7	20 30 31.256	− 0.213	+72 7 5.99	+12.22
α Cygni	2.1	20 37 16.368	+ 2.044	+44 50 42.28	12.70
μ Aquarii	5.4	20 46 4.296	+ 3.239	− 9 26 22.28	13.27
ν Cygni	4	20 52 37.484	+ 2.234	+40 41 55.01	13.73
* 12 Year Cat. 1879 .	6	20 53 4.035	− 2.514	+80 5 36.62	13.69
61 Cygni (*pr.*) . . .	5.6	21 1 25.797	+ 2.688	+38 9 1.80	+17.51
ζ Cygni	3	21 7 44.629	2.551	+29 43 38.76	14.60
α Cephei	3.2	21 15 40.014	1.437	+62 4 6.89	15.12
1 Pegasi	4.5	21 16 26.732	2.774	+19 17 1.72	15.25
β Aquarii	3	21 25 8.146	3.164	− 6 6 23.73	15.65
* β Cephei	3	21 27 4.754	+ 0.798	+70 1 29.77	+15.72
ξ Aquarii	5.4	21 31 15.352	3.198	− 8 24 0.60	15.96
ε Pegasi	2.3	21 38 11.663	2.948	+ 9 19 0.06	16.34
* 11 Cephei	5	21 40 7.797	0.905	+70 44 58.56	16.50
μ Capricorni . . .	5	21 46 38.610	3.278	−14 7 28.79	16.79
* 79 Draconis	6.7	21 51 20.856	+ 0.734	+73 7 30.12	+16.97
α Aquarii	3	21 59 31.031	3.083	− 0 54 41.98	17.35
α Gruis	2	22 0 32.247	3.811	−47 33 2.39	17.21
θ Aquarii	4.5	22 10 23.701	3.170	− 8 23 23.69	17.79
π Aquarii	5.4	22 19 2.766	3.065	+ 0 45 32.52	18.15
η Aquarii	4.3	22 29 5.186	+ 3.083	− 0 44 44.18	+18.45
*226 Cephei (B.) . . .	5.6	22 30 7.587	1.081	+75 35 51.46	18.52
ζ Pegasi	3.4	22 35 22.579	2.989	+10 11 43.09	18.71
* ι Cephei	4.3	22 45 20.354	2.119	+65 33 31.90	18.85
λ Aquarii	4	22 46 14.871	3.131	− 8 13 40.89	19.08
α Pis.Aus.(*Fomalhaut*)	1.2	22 50 54.362	+ 3.328	−30 16 5.24	+19.00
α Pegasi (*Markab*) .	2	22 58 41.057	2.985	+14 32 58.25	19.33
* ο Cephei	6.5	23 13 37.365	2.440	+67 26 37.52	19.63
θ Piscium	4.5	23 21 46.744	3.041	+ 5 42 33.92	19.75
ι Piscium	4.5	23 33 40.582	3.085	+ 4 57 55.33	19.49
* γ Cephei	3.4	23 34 21.029	+ 2.407	+76 57 5.38	+20.07
* Groombridge 4163 .	7	23 48 54.887	2.855	+73 43 52.28	20.00
ω Piscium	4	23 53 2.831	+ 3.079	+ 6 11 17.17	+19.94

*Circumpolar Stars.

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 13	° ′ +88 39		h m 1 13	° ′ +88 39		h m 1 12	° ′ +88 39		h m 1 12	° ′ +88 39
	s	″		s	″		s	″		s	″
0.3	57.97	57.1	1.2	29.47	57.5	1.1	69.15	52.6	1.0	59.12	43.7
1.3	57.19	57.2	2.2	28.52	57.4	2.1	68.48	52.3	2.0	59.07	43.3
2.3	56.37	57.4	3.2	27.56	57.2	3.1	67.82	52.1	3.0	59.09	43.0
3.3	55.49	57.5	4.2	26.62	57.1	4.1	67.21	51.8	4.0	59.17	42.6
4.3	54.56	57.6	5.2	25.72	57.0	5.1	66.66	51.5	5.0	59.29	42.3
5.3	53.58	57.7	6.2	24.87	56.8	6.1	66.18	51.2	6.0	59.43	42 0
6.3	52.57	57.8	7.2	24.09	56.6	7.1	65.76	50.9	7.0	59.57	41.7
7.2	51.55	57.8	8.2	23.36	56.5	8.1	65.39	50.6	8.0	59.69	41.5
8.2	50.56	57.9	9.2	22.67	56.3	9.1	65.05	50.3	9.0	59.78	41.2
9.2	49.60	57.9	10.2	22.00	56.2	10.1	64.72	50.1	10.0	59.83	40.9
10.2	48.69	57.9	11.2	21.32	56.0	11.1	64.38	49.8	11.0	59.86	40.6
11.2	47.84	57.9	12.2	20.61	55.9	12.1	64.02	49.6	12.0	59.90	40.3
12.2	47.02	57.9	13.1	19.86	55.8	13.1	63.62	49.3	13.0	59.96	40.0
13.2	46.22	57.9	14.1	19.07	55.7	14.1	63.19	49.1	14.0	60.06	39.7
14.2	45.42	58.0	15.1	18.25	55.5	15.1	62.75	48.8	15.0	60.21	39.4
15.2	44.59	58.0	16.1	17.42	55.3	16.1	62.31	48.5	16.0	60.42	39.1
16.2	43.72	58.1	17.1	16.61	55.2	17.1	61.90	48.2	17.0	60.70	38.7
17.2	42.81	58.1	18.1	15.82	55.0	18.1	61.54	47.9	18.0	61.03	38.4
18.2	41.85	58.1	19.1	15.08	54.7	19.1	61.24	47.6	19.0	61.40	38.1
19.2	40.86	58.2	20.1	14.40	54.5	20.1	61.01	47.3	20.0	61.78	37.9
20.2	39.84	58.2	21.1	13.78	54.3	21.0	60.84	47.0	21.0	62.15	37.6
21.2	38.84	58.1	22.1	13.21	54.0	22.0	60.71	46.7	22.0	62.49	37.3
22.2	37.88	58.1	23.1	12.68	53.8	23.0	60.61	46.4	23.0	62.78	37.1
23.2	36.96	58.0	24.1	12.16	53.6	24.0	60.51	46.1	24.0	63.04	36.8
24.2	36.09	57.9	25.1	11.63	53.4	25.0	60.39	45.8	25.0	63.29	36.6
25.2	35.27	57.9	26.1	11.06	53.2	26.0	60.24	45.5	25.9	63.56	36.3
26.2	34.49	57.8	27.1	10.45	53.0	27.0	60.05	45.2	26.9	63.85	36.0
27.2	33.72	57.7	28.1	9.81	52.8	28.0	59.84	45.0	27.9	64.17	35.7
28.2	32.94	57.7	29.1	9.15	52.6	29.0	59.62	44.7	28.9	64.54	35.4
29.2	32.14	57.6	30.1	8.48	52.3	30.0	59.41	44.4	29.9	64.99	35.1
30.2	31.29	57.6	31.1	7.82	52.1	31.0	59.24	44.0	30.9	65.51	34.7
31.2	30.40	57.5	32.1	7.21	51.8	32.0	59.12	43.7	31.9	66.07	34.5

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 13	° ′ +88 39		h m 1 13	° ′ +88 39		h m 1 13	° ′ +88 39		h m 1 14	° ′ +88 39
	s	″		s	″		s	″		s	″
1.9	6.07	34.5	1.9	27.00	28.3	1.8	54.19	27.0	1.7	22.86	30.6
2.9	6.65	34.2	2.8	27.82	28.3	2.8	55.05	27.1	2.7	23.72	30.8
3.9	7.24	34.0	3.8	28.60	28.2	3.8	55.90	27.1	3.7	24.63	31.0
4.9	7.82	33.8	4.8	29.36	28.1	4.8	56.77	27.1	4.7	25.57	31.1
5.9	8.36	33.5	5.8	30.11	28.0	5.8	57.69	27.2	5.7	26.54	31.3
6.9	8.87	33.3	6.8	30.88	27.9	6.8	58.65	27.2	6.7	27.50	31.5
7.9	9.34	33.1	7.8	31.68	27.8	7.8	59.66	27.2	7.7	28.44	31.8
8.9	9.80	32.9	8.8	32.53	27.6	8.7	60.71	27.3	8.7	29.34	32.0
9.9	10.27	32.7	9.8	33.43	27.5	9.7	61.78	27.3	9.7	30.19	32.3
10.9	10.78	32.4	10.8	34.39	27.4	10.7	62.85	27.4	10.7	30.97	32.6
11.9	11.33	32.2	11.8	35.39	27.3	11.7	63.89	27.5	11.7	31.70	32.8
12.9	11.93	31.9	12.8	36.40	27.2	12.7	64.89	27.7	12.7	32.39	33.1
13.9	12.60	31.7	13.8	37.39	27.2	13.7	65.84	27.8	13.7	33.08	33.3
14.9	13.33	31.4	14.8	38.36	27.2	14.7	66.73	27.9	14.6	33.78	33.5
15.9	14.09	31.2	15.8	39.30	27.1	15.7	67.58	28.1	15.6	34.51	33.7
16.9	14.86	31.0	16.8	40.19	27.1	16.7	68.41	28.2	16.6	35.27	34.0
17.9	15.63	30.8	17.8	41.04	27.1	17.7	69.24	28.3	17.6	36.08	34.2
18.9	16.38	30.7	18.8	41.86	27.1	18.7	70.09	28.4	18.6	36.92	34.4
19.9	17.08	30.5	19.8	42.67	27.0	19.7	70.98	28.5	19.6	37.77	34.7
20.9	17.74	30.4	20.8	43.50	27.0	20.7	71.92	28.6	20.6	38.62	35.0
21.9	18.37	30.2	21.8	44.36	26.9	21.7	72.91	28.6	21.6	39.44	35.3
22.9	18.98	30.0	22.8	45.28	26.9	22.7	73.93	28.8	22.6	40.22	35.6
23.9	19.60	29.8	23.8	46.25	26.8	23.7	74.97	28.9	23.6	40.94	35.9
24.9	20.25	29.6	24.8	47.27	26.8	24.7	76.00	29.1	24.6	41.60	36.2
25.9	20.96	29.4	25.8	48.32	26.7	25.7	76.99	29.3	25.6	42.21	36.6
26.9	21.73	29.2	26.8	49.37	26.7	26.7	77.93	29.5	26.6	42.80	36.9
27.9	22.56	29.0	27.8	50.41	26.8	27.7	78.82	29.7	27.6	43.38	37.2
28.9	23.44	28.8	28.8	51.42	26.8	28.7	79.66	29.9	28.6	43.97	37.5
29.9	24.34	28.7	29.8	52.39	26.9	29.7	80.47	30.1	29.6	44.59	37.7
30.9	25.25	28.6	30.8	53.31	26.9	30.7	81.25	30.3	30.6	45.26	38.0
31.9	26.14	28.4	31.8	54.19	27.0	31.7	82.04	30.4	31.6	45.96	38.3
32.9	27.00	28.3	32.8	55.05	27.1	32.7	82.86	30.6	32.6	47.69	38.6

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 1 14	° ′ +88 39		h m 1 15	° ′ +88 39		h m 1 14	° ′ +88 40		h m 1 14	° ′ +88 40
	s	″		s	″		s	″		s	″
1.6	47.69	38.6	1.5	0.48	49.2	1.4	61.75	1.2	1.4	49.52	11.1
2.6	47.43	38.9	2.5	0.79	49.6	2.4	61.45	1.6	2.3	48.83	11.3
3.6	48.15	39.2	3.5	1.04	50.1	3.4	61.12	1.9	3.3	48.17	11.5
4.6	48.82	39.6	4.5	1.22	50.5	4.4	60.80	2.2	4.3	47.55	11.8
5.6	49.44	40.0	5.5	1.34	50.9	5.4	60.49	2.6	5.3	46.96	12.0
6.6	50.00	40.3	6.5	1.42	51.3	6.4	60.22	2.9	6.3	46.40	12.2
7.6	50.50	40.7	7.5	1.49	51.6	7.4	59.99	3.2	7.3	45.84	12.5
8.6	50.95	41.0	8.5	1.57	52.0	8.4	59.78	3.5	8.3	45.27	12.7
9.6	51.37	41.4	9.5	1.68	52.3	9.4	59.58	3.9	9.3	44.65	13.0
10.6	51.79	41.7	10.5	1.82	52.7	10.4	59.37	4.2	10.3	43.99	13.3
11.6	52.23	42.0	11.5	2.00	53.0	11.4	59.14	4.6	11.3	43.26	13.5
12.6	52.71	42.3	12.5	2.20	53.4	12.4	58.87	5.0	12.3	42.48	13.8
13.6	53.23	42.6	13.5	2.40	53.8	13.4	58.53	5.4	13.3	41.66	14.0
14.6	53.78	42.9	14.5	2.58	54.2	14.4	58.12	5.7	14.3	40.82	14.3
15.6	54.35	43.3	15.5	2.73	54.6	15.4	57.66	6.1	15.3	39.98	14.5
16.6	54.92	43.6	16.5	2.83	55.0	16.4	57.17	6.5	16.3	39.15	14.6
17.6	55.47	44.0	17.5	2.87	55.4	17.4	56.66	6.8	17.3	38.36	14.8
18.6	55.97	44.4	18.5	2.85	55.8	18.4	56.16	7.1	18.3	37.62	15.0
19.6	56.41	44.8	19.5	2.77	56.2	19.4	55.68	7.4	19.3	36.92	15.1
20.6	56.79	45.2	20.5	2.66	56.6	20.4	55.23	7.7	20.3	36.24	15.3
21.5	57.11	45.6	21.5	2.55	57.0	21.4	54.82	8.0	21.3	35.55	15.5
22.5	57.40	46.0	22.5	2.46	57.4	22.4	54.44	8.3	22.3	34.84	15.7
23.5	57.67	46.3	23.5	2.39	57.7	23.4	54.06	8.6	23.3	34.09	15.9
24.5	57.95	46.7	24.5	2.36	58.1	24.4	53.67	8.9	24.3	33.29	16.1
25.5	58.25	47.0	25.5	2.36	58.4	25.4	53.25	9.2	25.3	32.42	16.3
26.5	58.58	47.4	26.4	2.38	58.8	26.4	52.76	9.6	26.3	31.49	16.4
27.5	58.94	47.7	27.4	2.39	59.2	27.4	52.20	9.9	27.3	30.53	16.6
28.5	59.33	48.1	28.4	2.37	59.6	28.4	51.59	10.2	28.3	29.57	16.7
29.5	59.73	48.4	29.4	2.31	60.0	29.4	50.93	10.5	29.3	28.63	16.8
30.5	60.12	48.8	30.4	2.19	60.4	30.4	50.23	10.8	30.3	27.71	16.9
31.5	60.48	49.2	31.4	2.00	60.8	31.4	49.52	11.1	31.3	26.83	17.0
32.5	60.79	49.6	32.4	1.75	61.2	32.3	48.83	11.3	32.3	26.00	17.0

APPARENT PLACES OF 51 CEPHEI, (*Hev.*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 42	° ′ +87 13		h m 6 42	° ′ +87 14		h m 6 41	° ′ +87 14		h m 6 41	° ′ +87 14
	s	″		s	″		s	″		s	″
0.5	21.12	59.0	1.4	20.21	8.9	1.3	72.46	15.2	1.2	59.79	17.5
1.5	21.27	59.3	2.4	20.03	9.2	2.3	72.09	15.4	2.2	59.31	17.5
2.5	21.43	59.6	3.4	19.82	9.5	3.3	71.69	15.6	3.2	58.84	17.4
3.5	21.57	59.9	4.4	19.57	9.8	4.3	71.26	15.8	4.2	58.39	17.4
4.5	21.69	60.3	5.4	19.30	10.1	5.3	70.81	15.9	5.2	57.97	17.3
5.5	21.77	60.6	6.4	19.02	10.3	6.3	70.37	16.0	6.2	57.58	17.2
6.5	21.82	61.0	7.4	18.75	10.6	7.3	69.94	16.1	7.2	57.21	17.1
7.5	21.84	61.3	8.4	18.49	10.8	8.3	69.53	16.2	8.2	56.86	17.1
8.5	21.83	61.7	9.4	18.24	11.0	9.3	69.15	16.3	9.2	56.50	17.0
9.5	21.80	62.0	10.4	18.01	11.2	10.3	68.79	16.4	10.2	56.14	16.9
10.5	21.76	62.3	11.4	17.80	11.4	11.3	68.45	16.5	11.2	55.76	16.9
11.5	21.73	62.6	12.4	17.60	11.7	12.3	68.11	16.6	12.2	55.36	16.9
12.5	21.72	62.9	13.4	17.40	11.9	13.3	67.76	16.7	13.2	54.94	16.8
13.5	21.71	63.2	14.4	17.18	12.2	14.3	67.39	16.8	14.2	54.51	16.7
14.5	21.72	63.4	15.4	16.93	12.4	15.3	67.00	16.9	15.2	54.08	16.6
15.4	21.74	63.7	16.4	16.66	12.7	16.3	66.59	17.0	16.2	53.65	16.5
16.4	21.77	64.0	17.4	16.36	13.0	17.3	66.15	17.1	17.2	53.23	16.4
17.4	21.79	64.4	18.4	16.02	13.2	18.3	65.69	17.2	18.2	52.83	16.2
18.4	21.78	64.7	19.4	15.66	13.4	19.3	65.23	17.3	19.2	52.45	16.0
19.4	21.75	65.0	20.4	15.31	13.6	20.3	64.78	17.3	20.2	52.11	15.9
20.4	21.68	65.4	21.4	14.97	13.8	21.3	64.34	17.3	21.2	51.79	15.7
21.4	21.58	65.7	22.4	14.64	14.0	22.3	63.92	17.3	22.2	51.47	15.6
22.4	21.45	66.1	23.3	14.32	14.1	23.3	63.52	17.3	23.2	51.15	15.5
23.4	21.30	66.4	24.3	14.01	14.3	24.3	63.14	17.3	24.2	50.82	15.3
24.4	21.15	66.6	25.3	13.71	14.4	25.3	62.77	17.3	25.2	50.48	15.2
25.4	21.01	66.9	26.3	13.41	14.6	26.3	62.40	17.4	26.2	50.11	15.1
26.4	20.88	67.1	27.3	13.11	14.8	27.3	62.02	17.4	27.2	49.72	15.0
27.4	20.77	67.4	28.3	12.80	15.0	28.3	61.62	17.4	28.2	49.31	14.8
28.4	20.67	67.7	29.3	12.46	15.2	29.3	61.19	17.5	29.2	48.90	14.6
29.4	20.58	67.8	30.3	12.09	15.4	30.3	60.74	17.5	30.2	48.51	14.4
30.4	20.48	68.2	31.3	11.69	15.6	31.2	60.27	17.5	31.2	48.14	14.2
31.4	20.36	68.5	32.3	11.26	15.8	32.2	59.79	17.5	32.2	47.80	14.0

APPARENT PLACES OF 51 CEPHEI, (*Hev.*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 41	° ′ +87 14		h m 6 41	° ′ +87 13		h m 6 41	° ′ +87 13		h m 6 41	° ′ +87 13
	s	″		s	″		s	″		s	″
1.2	48.14	14.2	1.1	41.04	66.5	1.0	40.99	57.1	1.9	48.12	47.6
2.2	47.80	14.0	2.1	40.98	66.2	2.0	41.14	56.8	2.9	48.41	47.4
3.2	47.49	13.8	3.1	40.92	65.9	3.0	41.27	56.5	3.9	48.71	47.1
4.2	47.21	13.6	4.1	40.86	65.6	4.0	41.39	56.3	4.9	49.03	46.8
5.2	46.95	13.3	5.1	40.79	65.3	5.0	41.48	56.0	5.9	49.38	46.5
6.1	46.70	13.1	6.1	40.70	65.1	6.0	41.57	55.7	6.9	49.76	46.2
7.1	46.46	12.9	7.1	40.60	64.8	7.0	41.68	55.3	7.9	50.17	45.9
8.1	46.21	12.7	8.1	40.49	64.5	8.0	41.81	55.0	8.9	50.60	45.6
9.1	45.94	12.6	9.1	40.37	64.2	9.0	41.96	54.7	9.9	51.03	45.4
10.1	45.65	12.4	10.1	40.27	63.9	10.0	42.14	54.3	10.9	51.46	45.2
11.1	45.35	12.2	11.1	40.20	63.6	11.0	42.35	54.0	11.9	51.87	45.0
12.1	45.04	12.0	12.0	40.15	63.2	12.0	42.58	53.6	12.9	52.25	44.8
13.1	44.73	11.7	13.0	40.14	62.8	13.0	42.83	53.3	13.9	52.62	44.6
14.1	44.44	11.5	14.0	40.15	62.5	14.0	43.09	53.0	14.9	52.97	44.4
15.1	44.17	11.2	15.0	40.19	62.2	15.0	43.34	52.7	15.9	53.31	44.1
16.1	43.93	10.9	16.0	40.24	61.9	16.0	43.57	52.5	16.9	53.66	43.9
17.1	43.72	10.6	17.0	40.28	61.6	17.0	43.78	52.2	17.9	54.02	43.6
18.1	43.54	10.3	18.0	40.31	61.3	18.0	43.97	51.9	18.9	54.40	43.4
19.1	43.38	10.1	19.0	40.33	61.0	18.9	44.14	51.6	19.9	54.82	43.1
20.1	43.22	9.8	20.0	40.33	60.7	19.9	44.32	51.3	20.9	55.27	42.9
21.1	43.05	9.6	21.0	40.31	60.4	20.9	44.51	51.0	21.9	55.74	42.7
22.1	42.87	9.3	22.0	40.28	60.1	21.9	44.72	50.7	22.9	56.23	42.4
23.1	42.66	9.1	23.0	40.26	59.8	22.9	44.96	50.4	23.8	56.72	42.3
24.1	42.44	8.9	24.0	40.26	59.5	23.9	45.24	50.1	24.8	57.21	42.1
25.1	42.21	8.6	25.0	40.28	59.1	24.9	45.55	49.7	25.8	57.69	41.9
26.1	41.98	8.4	26.0	40.34	58.8	25.9	45.88	49.4	26.8	58.15	41.8
27.1	41.72	8.1	27.0	40.43	58.4	26.9	46.22	49.1	27.8	58.59	41.6
28.1	41.55	7.8	28.0	40.55	58.1	27.9	46.57	48.9	28.8	59.01	41.4
29.1	41.37	7.4	29.0	40.68	57.7	28.9	46.91	48.6	29.8	59.44	41.3
30.1	41.22	7.1	30.0	40.84	57.4	29.9	47.24	48.4	30.8	59.87	41.1
31.1	41.12	6.8	31.0	40.99	57.1	30.9	47.55	48.1	31.8	60.32	40.9
32.1	41.04	6.5	32.0	41.14	56.8	31.9	47.84	47.9	32.8	60.79	40.7

APPARENT PLACES OF 51 CEPHEI, (*Hev.*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 6 42	° ′ +87 13		h m 6 42	° ′ +87 13		h m 6 42	° ′ +87 13		h m 6 42	° ′ +87 13
	s	″		s	″		s	″		s	″
1.8	0.79	40.7	1.7	16.47	37.4	1.7	33.13	38.7	1.6	46.21	44.3
2.8	1.29	40.5	2.7	17.08	37.4	2.7	33.64	38.9	2.6	46.50	44.5
3.8	1.81	40.3	3.7	17.68	37.4	3.7	34.12	39.0	3.6	46.77	44.8
4.8	2.35	40.1	4.7	18.27	37.4	4.7	34.57	39.2	4.6	47.05	45.0
5.8	2.90	39.9	5.7	18.83	37.4	5.6	35.00	39.3	5.6	47.33	45.2
6.8	3.46	39.8	6.7	19.36	37.4	6.6	35.42	39.5	6.6	47.63	45.5
7.8	4.00	39.7	7.7	19.87	37.5	7.6	35.85	39.6	7.6	47.95	45.7
8.8	4.51	39.6	8.7	20.37	37.5	8.6	36.30	39.7	8.6	48.28	45.9
9.8	5.00	39.5	9.7	20.85	37.5	9.6	36.77	39.8	9.6	48.62	46.2
10.8	5.46	39.4	10.7	21.33	37.5	10.6	37.25	39.9	10.5	48.97	46.5
11.8	5.91	39.3	11.7	21.82	37.5	11.6	37.75	40.1	11.5	49.30	46.8
12.8	6.36	39.2	12.7	22.33	37.4	12.6	38.25	40.2	12.5	49.61	47.1
13.8	6.82	39.0	13.7	22.87	37.4	13.6	38.76	40.4	13.5	49.89	47.4
14.8	7.29	38.8	14.7	23.43	37.4	14.6	39.26	40.6	14.5	50.15	47.7
15.8	7.79	38.7	15.7	24.01	37.4	15.6	39.74	40.8	15.5	50.38	48.0
16.8	8.33	38.6	16.7	24.60	37.5	16.6	40.19	41.0	16.5	50.58	48.3
17.8	8.89	38.4	17.7	25.19	37.5	17.6	40.61	41.2	17.5	50.77	48.6
18.8	9.47	38.3	18.7	25.77	37.6	18.6	41.01	41.5	18.5	50.96	48.8
19.8	10.05	38.2	19.7	26.33	37.7	19.6	41.39	41.7	19.5	51.16	49.1
20.8	10.63	38.2	20.7	26.86	37.8	20.6	41.77	41.9	20.5	51.37	49.3
21.8	11.19	38.1	21.7	27.36	37.9	21.6	42.16	42.0	21.5	51.60	49.6
22.8	11.73	38.1	22.7	27.84	37.9	22.6	42.56	42.2	22.5	51.84	49.9
23.8	12.25	38.0	23.7	28.32	38.0	23.6	42.98	42.4	23.5	52.08	50.2
24.8	12.75	38.0	24.7	28.80	38.1	24.6	43.42	42.5	24.5	52.31	50.5
25.8	13.24	37.9	25.7	29.30	38.1	25.6	43.86	42.7	25.5	52.52	50.8
26.8	13.74	37.9	26.7	29.82	38.2	26.6	44.31	42.9	26.5	52.71	51.1
27.8	14.25	37.8	27.7	30.36	38.2	27.6	44.74	43.2	27.5	52.86	51.5
28.7	14.77	37.7	28.7	30.91	38.3	28.6	45.15	43.4	28.5	52.98	51.8
29.7	15.31	37.6	29.7	31.48	38.3	29.6	45.53	43.7	29.5	53.07	52.2
30.7	15.88	37.5	30.7	32.05	38.4	30.6	45.89	44.0	30.5	53.13	52.5
31.7	16.47	37.4	31.7	32.60	38.6	31.6	46.21	44.3	31.5	53.18	52.8
32.7	17.08	37.4	32.7	33.13	38.7	32.6	46.50	44.5	32.5	53.24	53.1

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36
	s	″		s	″		s	″		s	″
1.0	13.87	21.3	1.9	16.93	11.3	1.8	24.68	5.6	1.7	35.64	4.7
2.0	13.82	21.0	2.9	17.15	11.0	2.8	25.03	5.5	2.7	36.02	4.8
3.0	13.79	20.7	3.9	17.40	10.7	3.8	25.40	5.3	3.7	36.39	4.9
4.0	13.77	20.3	4.9	17.66	10.4	4.8	25.78	5.2	4.7	36.75	5.0
5.0	13.77	20.0	5.9	17.93	10.2	5.8	26.15	5.1	5.7	37.08	5.1
6.0	13.78	19.6	6.9	18.20	9.9	6.8	26.52	5.0	6.7	37.40	5.3
7.0	13.82	19.2	7.9	18.46	9.7	7.8	26.88	5.0	7.7	37.70	5.4
8.0	13.88	18.8	8.9	18.71	9.5	8.8	27.23	4.9	8.7	37.99	5.5
9.0	13.96	18.5	9.9	18.95	9.3	9.8	27.56	4.9	9.7	38.29	5.6
10.0	14.05	18.2	10.9	19.19	9.1	10.8	27.88	4.8	10.7	38.60	5.7
10.9	14.14	17.9	11.9	19.42	8.9	11.8	28.20	4.8	11.7	38.92	5.7
11.9	14.23	17.6	12.9	19.65	8.7	12.8	28.51	4.7	12.7	39.25	5.8
12.9	14.31	17.3	13.9	19.89	8.4	13.8	28.83	4.6	13.7	39.59	5.9
13.9	14.38	17.0	14.9	20.14	8.2	14.8	29.17	4.5	14.7	39.94	6.1
14.9	14.44	16.7	15.9	20.40	8.0	15.8	29.53	4.4	15.7	40.28	6.2
15.9	14.49	16.4	16.9	20.69	7.7	16.8	29.90	4.4	16.7	40.62	6.4
16.9	14.55	16.1	17.8	21.00	7.5	17.8	30.28	4.3	17.7	40.94	6.6
17.9	14.62	15.7	18.8	21.32	7.3	18.8	30.67	4.3	18.7	41.24	6.8
18.9	14.71	15.4	19.8	21.65	7.1	19.8	31.05	4.3	19.7	41.52	7.0
19.9	14.82	15.0	20.8	21.97	6.9	20.8	31.42	4.3	20.7	41.78	7.2
20.9	14.96	14.7	21.8	22.28	6.8	21.8	31.79	4.4	21.7	42.04	7.4
21.9	15.12	14.4	22.8	22.58	6.7	22.8	32.13	4.4	22.7	42.30	7.6
22.9	15.29	14.0	23.8	22.88	6.5	23.8	32.47	4.4	23.7	42.56	7.7
23.9	15.46	13.7	24.8	23.17	6.4	24.7	32.79	4.5	24.7	42.83	7.9
24.9	15.63	13.5	25.8	23.45	6.3	25.7	33.11	4.5	25.7	43.11	8.0
25.9	15.80	13.2	26.8	23.74	6.1	26.7	33.44	4.5	26.7	43.40	8.2
26.9	15.96	13.0	27.8	24.04	6.0	27.7	33.78	4.5	27.7	43.70	8.4
27.9	16.11	12.7	28.8	24.35	5.8	28.7	34.13	4.5	28.7	44.01	8.6
28.9	16.26	12.5	29.8	24.68	5.6	29.7	34.49	4.5	29.7	44.31	8.8
29.9	16.41	12.2	30.8	25.03	5.5	30.7	34.87	4.6	30.6	44.59	9.1
30.9	16.57	11.9	31.8	25.40	5.3	31.7	35.26	4.6	31.6	44.85	9.4
31.9	16.74	11.6	32.8	25.78	5.2	32.7	35.64	4.7	32.6	45.09	9.6

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36
	s	″		s	″		s	″		s	″
1.6	44.85	9.4	1.6	49.86	18.2	1.5	48.99	27.9	1.4	42.52	36.7
2.6	45.09	9.6	2.6	49.89	18.5	2.5	48.86	28.2	2.4	42.25	37.0
3.6	45.31	9.9	3.6	49.92	18.8	3.5	48.73	28.4	3.4	41.98	37.2
4.6	45.52	10.2	4.6	49.95	19.0	4.5	48.61	28.7	4.4	41.70	37.5
5.6	45.72	10.4	5.6	49.99	19.3	5.5	48.50	29.0	5.4	41.40	37.8
6.6	45.91	10.6	6.6	50.04	19.6	6.5	48.38	29.3	6.4	41.07	38.1
7.6	46.11	10.9	7.5	50.10	19.9	7.5	48.26	29.7	7.4	40.73	38.3
8.6	46.31	11.1	8.5	50.16	20.2	8.5	48.12	30.0	8.4	40.37	38.6
9.6	46.52	11.3	9.5	50.21	20.6	9.5	47.95	30.4	9.4	40.01	38.8
10.6	46.74	11.5	10.5	50.25	20.9	10.5	47.76	30.7	10.4	39.66	39.0
11.6	46.97	11.8	11.5	50.27	21.3	11.5	47.55	31.0	11.4	39.31	39.2
12.6	47.19	12.1	12.5	50.26	21.7	12.5	47.33	31.4	12.4	38.97	39.4
13.6	47.40	12.4	13.5	50.24	22.0	13.4	47.11	31.7	13.4	38.63	39.5
14.6	47.60	12.7	14.5	50.20	22.4	14.4	46.89	31.9	14.4	38.31	39.7
15.6	47.78	13.0	15.5	50.15	22.7	15.4	46.67	32.2	15.4	38.01	39.9
16.6	47.94	13.3	16.5	50.09	23.0	16.4	46.46	32.4	16.4	37.70	40.1
17.6	48.08	13.6	17.5	50.03	23.3	17.4	46.27	32.7	17.4	37.38	40.3
18.6	48.20	13.9	18.5	49.99	23.6	18.4	46.09	33.0	18.3	37.04	40.5
19.6	48.32	14.2	19.5	49.96	23.9	19.4	45.90	33.2	19.3	36.69	40.7
20.6	48.44	14.5	20.5	49.94	24.2	20.4	45.71	33.5	20.3	36.32	41.0
21.6	48.56	14.7	21.5	49.93	24.5	21.4	45.51	33.9	21.3	35.93	41.2
22.6	48.69	15.0	22.5	49.91	24.8	22.4	45.30	34.2	22.3	35.53	41.3
23.6	48.84	15.2	23.5	49.87	25.2	23.4	45.07	34.5	23.3	35.12	41.5
24.6	49.00	15.5	24.5	49.82	25.5	24.4	44.81	34.8	24.3	34.70	41.6
25.6	49.16	15.8	25.5	49.75	25.9	25.4	44.52	35.1	25.3	34.29	41.8
26.6	49.31	16.1	26.5	49.66	26.3	26.4	44.21	35.4	26.3	33.90	41.9
27.6	49.45	16.4	27.5	49.55	26.6	27.4	43.90	35.6	27.3	33,53	42.0
28.6	49.58	16.8	28.5	49.43	27.0	28.4	43.60	35.8	28.3	33.16	42.1
29.6	49.68	17.2	29.5	49.29	27.3	29.4	43.32	36.1	29.3	32.79	42.2
30.6	49.76	17.5	30.5	49.13	27.6	30.4	43.05	36.3	30.3	32.42	42.4
31.6	49.82	17.8	31.5	48.99	27.9	31.4	42.79	36.5	31.3	32.05	42.6
32.6	49.86	18.2	32.5	48.86	28.2	32.4	42.52	36.7	32.3	31.67	42.7

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 18 11	° ′ +86 36		h m 18 11	° ′ +86 36		h m 18 10	° ′ +86 36		h m 18 10	° ′ +86 36
	s	″		s	″		s	″		s	″
1.3	31.67	42.7	1.2	18.88	44.5	1.1	65.98	41.5	1.1	56.74	34.4
2.3	31.26	42.9	2.2	18.41	44.5	2.1	65.60	41.3	2.1	56.55	34.1
3.3	30.83	43.0	3.2	17.94	44.4	3.1	65.24	41.1	3.1	56.37	33.8
4.3	30.39	43.2	4.2	17.48	44.4	4.1	64.90	40.9	4.1	56.19	33.5
5.3	29.94	43.3	5.2	17.03	44.3	5.1	64.58	40.7	5.1	56.02	33.2
6.3	29.50	43.4	6.2	16.59	44.3	6.1	64.27	40.5	6.0	55.84	33.0
7.3	29.06	43.5	7.2	16.17	44.2	7.1	63.95	40.3	7.0	55.65	32.7
8.3	28.63	43.5	8.2	15.77	44.1	8.1	63.62	40.1	8.0	55.45	32.4
9.3	28.22	43.6	9.2	15.38	44.0	9.1	63.28	40.0	9.0	55.24	32.2
10.3	27.83	43.6	10.2	15.00	44.0	10.1	62.93	39.8	10.0	55.03	31.9
11.3	27.45	43.7	11.2	14.61	43.9	11.1	62.58	39.6	11.0	54.83	31.5
12.3	27.07	43.8	12.2	14.21	43.9	12.1	62.22	39.4	12.0	54.64	31.2
13.3	26.68	43.9	13.2	13.79	43.8	13.1	61.85	39.2	13.0	54.47	30.8
14.3	26.28	44.0	14.2	13.35	43.8	14.1	61.49	38.9	14.0	54.32	30.5
15.3	25.87	44.1	15.2	13.91	43.7	15.1	61.15	38.7	15.0	54.20	30.1
16.3	25.44	44.1	16.2	12.47	43.7	16.1	60.83	38.4	16.0	54.10	29.8
17.3	25.00	44.2	17.2	12.02	43.6	17.1	60.53	38.1	17.0	54.00	29.4
18.3	24.55	44.3	18.2	11.57	43.4	18.1	60.25	37.8	18.0	53.91	29.1
19.3	24.08	44.4	19.2	11.14	43.3	19.1	59.98	37.6	19.0	53.81	28.8
20.3	23.61	44.4	20.2	10.73	43.1	20.1	59.71	37.4	20.0	53.71	28.5
21.3	23.15	44.4	21.2	10.33	43.0	21.1	59.44	37.1	21.0	53.60	28.3
22.3	22.71	44.4	22.2	9.95	42.9	22.1	59.17	36.9	22.0	53.48	28.0
23.3	22.28	44.3	23.2	9.58	42.7	23.1	58.90	36.7	23.0	53.36	27.7
24.3	21.86	44.3	24.2	9.21	42.6	24.1	58.61	36.5	24.0	53.25	27.3
25.2	21.45	44.3	25.2	8.84	42.5	25.1	58.31	36.2	25.0	53.16	27.0
26.2	21.05	44.4	26.2	8.45	42.4	26.1	58.01	36.0	26.0	53.08	26.6
27.2	20.64	44.4	27.2	8.04	42.3	27.1	57.72	35.7	27.0	53.02	26.2
28.2	20.22	44.4	28.2	7.63	42.2	28.1	57.44	35.4	28.0	52.99	25.9
29.2	19.79	44.4	29.2	7.21	42.1	29.1	57.18	35.1	29.0	52.98	25.5
30.2	19.34	44.5	30.2	6.79	41.9	30.1	56.95	34.7	30.0	52.99	25.2
31.2	18.88	44.5	31.2	6.38	41.7	31.1	56.74	34.4	31.0	53.00	24.8
32.2	18.41	44.5	32.1	5.98	41.5	32.1	56.55	34.1	32.0	53.02	24.5

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 19 44	° ′ +88 56		h m 19 44	° ′ +88 56		h m 19 44	° ′ +88 55		h m 19 45	° ′ +88 55
	s	″		s	″		s	″		s	″
1.1	40.16	19.4	1.0	34.39	9.7	1.9	48.83	61.6	1.8	19.19	57.0
2.1	39.54	19.2	2.0	34.52	9.4	2.9	49.64	61.3	2.8	20.43	56.9
3.1	38.92	18.9	3.0	34.73	9.0	3.9	50.52	61.0	3.8	21.65	56.9
4.0	38.32	18.6	4.0	35.02	8.6	4.9	51.45	60.8	4.8	22.84	56.9
5.0	37.76	18.2	5.0	35.37	8.3	5.9	52.42	60.6	5.8	23.97	56.9
6.0	37.28	17.9	6.0	35.79	8.0	6.9	53.40	60.4	6.8	25.04	56.9
7.0	36.89	17.5	7.0	36.24	7.7	7.9	54.37	60.2	7.8	26.06	56.9
8.0	36.57	17.2	8.0	36.71	7.4	8.9	55.31	60.1	8.8	27.05	56.9
9.0	36.31	16.8	8.9	37.17	7.1	9.9	56.20	59.9	9.8	28.03	56.8
10.0	36.10	16.5	9.9	37.60	6.9	10.9	57.05	59.7	10.8	29.03	56.8
11.0	35.92	16.2	10.9	37.98	6.6	11.9	57.87	59.6	11.8	30.06	56.8
12.0	35.75	15.9	11.9	38.32	6.3	12.9	58.66	59.4	12.8	31.15	56.8
13.0	35.55	15.7	12.9	38.65	6.1	13.9	59.47	59.2	13.8	32.28	56.7
14.0	35.32	15.4	13.9	38.99	5.8	14.9	60.32	59.0	14.8	33.46	56.7
15.0	35.06	15.1	14.9	39.35	5.5	15.9	61.22	58.8	15.8	34.67	56.8
16.0	34.77	14.8	15.9	39.77	5.2	16.8	62.18	58.7	16.8	35.89	56.8
17.0	34.46	14.5	16.9	40.26	4.8	17.8	63.22	58.5	17.8	37.08	56.9
18.0	34.17	14.2	17.9	40.83	4.5	18.8	64.31	58.3	18.8	38.22	57.0
19.0	33.93	13.8	18.9	41.47	4.2	19.8	65.43	58.2	19.8	39.31	57.1
20.0	33.75	13.4	19.9	42.16	4.0	20.8	66.56	58.1	20.8	40.34	57.1
21.0	33.65	13.1	20.9	42.88	3.7	21.8	67.67	58.0	21.7	41.33	57.2
22.0	33.64	12.7	21.9	43.61	3.5	22.8	68.73	57.9	22.7	42.30	57.3
23.0	33.70	12.4	22.9	44.32	3.2	23.8	69.73	57.8	23.7	43.27	57.4
24.0	33.81	12.1	23.9	44.99	3.0	24.8	70.70	57.8	24.7	44.26	57.4
25.0	33.94	11.8	24.9	45.61	2.8	25.8	71.65	57.7	25.7	45.30	57.5
26.0	34.06	11.5	25.9	46.22	2.6	26.8	72.59	57.6	26.7	46.40	57.5
27.0	34.16	11.2	26.9	46.83	2.4	27.8	73.55	57.5	27.7	47.54	57.6
28.0	34.22	10.9	27.9	47.45	2.1	28.8	74.55	57.4	28.7	48.71	57.7
29.0	34.26	10.6	28.9	48.10	1.8	29.8	75.63	57.2	29.7	49.90	57.8
30.0	34.28	10.3	29.9	48.83	1.6	30.8	76.77	57.1	30.7	51.07	57.9
31.0	34.32	10.0	30.9	49.64	1.3	31.8	77.96	57.0	31.7	52.20	58.0
32.0	34.39	9.7	31.9	50.52	1.0	32.8	79.19	57.0	32.7	53.27	58.2

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m 19 45	° ′ +88 55		h m 19 46	° ′ +88 56		h m 19 46	° ′ +88 56		h m 19 45	° ′ +88 56
	s	″		s	″		s	″		s	″
1.7	52.20	58.0	1.6	18.38	4.4	1.6	28.77	13.6	1.5	81.67	24.0
2.7	53.27	58.2	2.6	18.87	4.6	2.6	28.74	13.9	2.5	81.22	24.3
3.7	54.27	58.4	3.6	19.33	4.9	3.6	28.74	14.2	3.5	80.78	24.6
4.7	55.21	58.5	4.6	19.81	5.1	4.5	28.78	14.5	4.5	80.32	25.0
5.7	56.09	58.7	5.6	20.31	5.4	5.5	28.86	14.8	5.5	79.81	25.3
6.7	56.94	58.8	6.6	20.85	5.6	6.5	28.96	15.1	6.5	79.24	25.7
7.7	57.78	59.0	7.6	21.42	5.9	7.5	29.04	15.5	7.5	78.59	26.1
8.7	58.65	59.1	8.6	22.01	6.2	8.5	29.08	15.8	8.5	77.87	26.4
9.7	59.56	59.2	9.6	22.62	6.5	9.5	29.07	16.2	9.4	77.10	26.7
10.7	60.51	59.4	10.6	23.21	6.8	10.5	28.98	16.6	10.4	76.31	27.0
11.7	61.50	59.5	11.6	23.76	7.1	11.5	28.81	17.0	11.4	75.52	27.3
12.7	62.52	59.7	12.6	24.24	7.4	12.5	28.57	17.3	12.4	74.75	27.6
13.7	63.54	59.9	13.6	24.64	7.8	13.5	28.30	17.7	13.4	74.02	27.9
14.7	64.54	60.1	14.6	24.97	8.1	14.5	28.01	18.0	14.4	73.34	28.2
15.7	65.49	60.3	15.6	25.25	8.4	15.5	27.72	18.3	15.4	72.69	28.4
16.7	66.37	60.5	16.6	25.50	8.7	16.5	27.47	18.7	16.4	72.04	28.7
17.7	67.18	60.8	17.6	25.74	9.0	17.5	27.26	19.0	17.4	71.40	29.0
18.7	67.94	61.0	18.6	26.00	9.3	18.5	27.09	19.3	18.4	70.72	29.3
19.7	68.66	61.2	19.6	26.30	9.6	19.5	26.94	19.6	19.4	69.98	29.7
20.7	69.36	61.4	20.6	26.64	9.9	20.5	26.79	19.9	20.4	69.17	30.0
21.7	70.06	61.6	21.6	27.01	10.2	21.5	26.63	20.3	21.4	68.29	30.3
22.7	70.79	61.8	22.6	27.39	10.5	22.5	26.42	20.6	22.4	67.34	30.7
23.7	71.57	62.0	23.6	27.77	10.8	23.5	26.14	21.0	23.4	66.34	31.0
24.7	72.40	62.2	24.6	28.12	11.1	24.5	25.78	21.4	24.4	65.31	31.2
25.7	73.26	62.4	25.6	28.42	11.5	25.5	25.34	21.7	25.4	64.28	31.5
26.7	74.12	62.7	26.6	28.64	11.9	26.5	24.83	22.1	26.4	63.27	31.7
27.7	74.97	62.9	27.6	28.77	12.2	27.5	24.28	22.4	27.4	62.30	32.0
28.6	75.79	63.2	28.6	28.83	12.6	28.5	23.71	22.8	28.4	61.37	32.2
29.6	76.55	63.5	29.6	28.84	12.9	29.5	23.15	23.1	29.4	60.48	32.5
30.6	77.23	63.8	30.6	28.81	13.2	30.5	22.62	23.4	25.4	59.61	32.7
31.6	77.84	64.1	31.6	28.77	13.6	31.5	22.13	23.7	31.4	58.73	33.0
32.6	78.38	64.4	32.6	28.74	13.9	32.5	21.67	24.0	32.4	57.82	33.3

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	h m 19 45	° ′ +88 56		h m 19 44	° ′ +88 56		h m 19 44	° ′ +88 56		h m 19 43	° ′ +88 56
	s	″		s	″		s	″		s	″
1.4	57.82	33.3	1.3	82.31	39.5	1.2	39.70	41.4	1.1	62.01	38.4
2.4	56.85	33.6	2.3	80.90	39.7	2.2	38.27	41.4	2.1	61.00	38.2
3.4	55.81	33.9	3.3	79.46	39.8	3.2	36.89	41.3	3.1	60.04	37.9
4.4	54.69	34.2	4.3	78.01	39.9	4.2	35.58	41.2	4.1	59.12	37.8
5.4	53.52	34.4	5.3	76.58	40.0	5.2	34.33	41.2	5.1	58.21	37.6
6.4	52.32	34.7	6.3	75.18	40.1	6.2	33.12	41.1	6.1	57.29	37.4
7.4	51.12	34.9	7.3	73.84	40.2	7.2	31.93	41.0	7.1	56.34	37.2
8.4	49.93	35.1	8.3	72.56	40.2	8.2	30.73	41.0	8.1	55.34	37.0
9.4	48.79	35.3	9.3	71.32	40.3	9.2	29.50	41.0	9.1	54.30	36.9
10.4	47.70	35.5	10.3	70.10	40.4	10.2	28.22	41.0	10.1	53.24	36.7
11.4	46.65	35.7	11.3	68.88	40.5	11.2	26.89	40.9	11.1	52.16	36.5
12.4	45.63	35.9	12.3	67.64	40.6	12.2	25.52	40.9	12.1	51.09	36.2
13.4	44.61	36.1	13.3	66.36	40.7	13.2	24.12	40.8	13.1	50.07	36.0
14.3	43.58	36.4	14.3	65.01	40.9	14.2	22.70	40.7	14.1	49.13	35.7
15.3	42.51	36.6	15.3	63.59	41.0	15.2	21.29	40.6	15.1	48.23	35.4
16.3	41.38	36.8	16.3	62.12	41.1	16.2	19.93	40.5	16.1	47.42	35.2
17.3	40.17	37.1	17.3	60.62	41.1	17.2	18.64	40.3	17.1	46.67	34.9
18.3	38.89	37.3	18.3	59.11	41.2	18.2	17.41	40.2	18.1	45.96	34.6
19.3	37.56	37.5	19.3	57.62	41.2	19.2	16.23	40.1	19.1	45.25	34.4
20.3	36.20	37.7	20.2	56.17	41.2	20.2	15.09	39.9	20.1	44.55	34.2
21.3	34.84	37.9	21.2	54.78	41.2	21.2	13.98	39.8	21.1	43.79	34.0
22.3	33.50	38.0	22.2	53.44	41.2	22.2	12.86	39.7	22.1	43.02	33.8
23.3	32.20	38.2	23.2	52.15	41.2	23.2	11.71	39.6	23.1	42.20	33.5
24.3	30.95	38.3	24.2	50.89	41.2	24.2	10.52	39.5	24.1	41.37	33.3
25.3	29.73	38.5	25.2	49.62	41.3	25.2	9.29	39.4	25.1	40.56	33.0
26.3	28.55	38.6	26.2	48.33	41.3	26.2	8.03	39.3	26.1	39.78	32.7
27.3	27.38	38.8	27.2	46.99	41.4	27.2	6.75	39.2	27.1	39.07	32.4
28.3	26.19	39.0	28.2	45.59	41.4	28.1	5.49	39.0	28.1	38.43	32.0
29.3	24.95	39.1	29.2	44.14	41.5	29.1	4.26	38.8	29.1	37.88	31.7
30.3	23.66	39.3	30.2	42.66	41.5	30.1	3.09	38.6	30.1	37.39	31.4
31.3	22.31	39.5	31.2	41.17	41.4	31.1	2.01	38.4	31.1	36.96	31.1
32.3	20.90	39.7	32.2	39.70	41.4	32.1	1.00	38.2	32.1	36.57	30.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	α Andromedæ.		γ Pegasi. (*Algenib.*)		*β Hydri.		α Cassiopeæ	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 0 2	° ′ +28 25	h m 0 6	° ′ +14 30	h m 0 19	° ′ −77 55	h m 0 33	° ′ +55 52
	s	″	s	″	s	″	s	″
(Dec. 30.3)	5.15 −.13	13.9 −0.7	57.61 −.11	27.7 −0.7	20.88 −.94	108.0 +0.8	35.59 −.26	25.6 −0.1
Jan. 9.2	5.02 .13	13.0 1.0	57.51 .10	26.9 0.8	19.96 .89	106.9 1.4	35.33 .27	25.2 0.6
19.2	4.90 .12	11.9 1.3	57.41 .10	26.0 0.9	19.11 .82	105.3 2.0	35.06 .27	24.3 1.1
29.2	4.79 .10	10.6 1.4	57.31 .08	25.1 1.0	18.33 .73	103.0 2.5	34.80 .25	23.0 1.5
Feb. 8.1	4.70 .08	9.1 1.5	57.24 .07	24.1 1.0	17.66 .61	100.3 2.9	34.57 .21	21.2 1.9
18.1	4.63 .05	7.5 1.6	57.18 .04	23.1 0.9	17.11 .48	97.2 3.3	34.37 .17	19.1 2.2
28.1	4.60 −.02	5.9 1.5	57.16 −.01	22.2 0.8	16.70 .34	93.8 3.6	34.23 .12	16.8 2.4
Mar. 10.0	4.60 +.02	4.4 1.4	57.16 +.02	21.5 0.7	16.43 .19	90.2 3.8	34.14 −.05	14.4 2.5
20.0	4.64 .06	3.1 1.3	57.20 .06	20.9 0.5	16.31 −.04	86.3 3.9	34.12 +.02	11.9 2.5
30.0	4.73 .11	1.9 1.0	57.28 .10	20.5 −0.2	16.35 +.12	82.4 3.9	34.17 .09	9.4 2.3
Apr. 9.0	4.86 .15	1.1 0.7	57.40 .14	20.5 +0.1	16.55 .28	78.6 3.8	34.30 .16	7.2 2.1
19.0	5.04 .20	0.5 −0.3	57.56 .18	20.7 0.4	16.91 .43	74.8 3.7	34.50 .24	5.2 1.8
28.9	5.26 .24	0.4 0.0	57.76 .22	21.2 0.7	17.41 .58	71.2 3.5	34.77 .30	3.6 1.4
May 8.9	5.53 .28	0.6 +0.4	58.00 .26	22.1 1.0	18.06 .72	67.8 3.2	35.10 .36	2.4 1.0
18.9	5.82 .31	1.2 0.8	58.27 .28	23.2 1.3	18.84 .84	64.8 2.9	35.49 .42	1.6 −0.5
28.8	6.15 .33	2.2 1.2	58.57 .31	24.7 1.6	19.73 .94	62.1 2.4	35.93 .46	1.3 0.0
June 7.8	6.49 .35	3.6 1.5	58.89 .32	26.4 1.8	20.71 1.02	59.9 2.0	36.40 .48	1.6 +0.5
17.8	6.84 .35	5.2 1.8	59.21 .33	28.3 2.0	21.76 1.07	58.2 1.5	36.89 .50	2.3 1.0
27.7	7.19 .35	7.2 2.1	59.54 .33	30.3 2.1	22.85 1.10	57.0 0.9	37.39 .50	3.5 1.4
July 7.7	7.54 .34	9.4 2.3	59.87 .32	32.5 2.2	23.96 1.10	56.4 +0.3	37.88 .48	5.1 1.9
17.7	7.87 .32	11.8 2.4	60.18 .30	34.7 2.2	25.04 1.06	56.4 −0.2	38.36 .46	7.2 2.2
27.7	8.17 .29	14.3 2.5	60.47 .28	36.9 2.2	26.08 1.00	56.9 0.8	38.80 .43	9.6 2.6
Aug. 6.6	8.44 .26	16.8 2.6	60.73 .25	39.1 2.1	27.03 .90	58.0 1.3	39.22 .39	12.3 2.8
16.6	8.68 .22	19.4 2.5	60.96 .21	41.1 2.0	27.88 .78	59.6 1.8	39.58 .34	15.2 3.0
26.6	8.88 .18	21.9 2.5	61.15 .17	43.0 1.8	28.58 .63	61.6 2.3	39.90 .29	18.3 3.2
Sept. 5.6	9.04 .14	24.3 2.4	61.31 .14	44.8 1.6	29.13 .46	64.1 2.6	40.16 .23	21.6 3.3
15.5	9.16 .10	26.6 2.2	61.43 .10	46.3 1.4	20.50 .28	66.8 2.9	40.37 .18	24.8 3.3
25.5	9.23 .06	28.7 2.0	61.50 .06	47.6 1.2	29.68 +.09	69.8 3.0	40.51 .12	28.1 3.2
Oct. 5.5	9.27 +.02	30.6 1.8	61.55 +.03	48.8 1.0	29.68 −.10	72.8 3.0	40.00 .06	31.3 3.1
15.4	9.27 −.01	32.3 1.5	61.56 .00	49.6 0.8	29.48 .29	75.8 2.9	40.64 +.01	34.3 2.9
25.4	9.25 .04	33.7 1.3	61.54 −.03	50.3 0.5	29.09 .47	78.7 2.7	40.62 −.04	37.2 2.7
Nov. 4.4	9.19 .07	34.8 1.0	61.50 .05	50.7 0.3	28.55 .62	81.2 2.4	40.55 .09	39.8 2.4
14.4	9.11 .09	35.7 0.7	61.44 .07	50.9 +0.1	27.86 .75	83.4 1.9	40.44 .14	42.0 2.1
24.3	9.01 .11	36.2 +0.4	61.36 .09	50.9 −0.1	27.05 .85	85.1 1.4	40.28 .18	43.9 1.6
Dec. 4.3	8.90 .12	36.4 0.0	61.26 .10	50.7 0.3	26.17 .92	86.2 0.9	40.08 .21	45.3 1.2
14.3	8.78 .13	36 3 −0.3	61.16 .11	50.3 0.5	25.23 .95	86.8 −0.2	39.86 .24	46.2 0.7
24.3	8.65 .13	35.9 0.6	61.05 .11	49.7 0.6	24.27 .96	86.7 +0.4	39.61 .26	46.7 +0.2
34.2	8.52 −.13	35.1 −0.9	60.94 −.11	49.0 −0.8	23.32 −.93	86.0 +1.0	39.34 −.27	46.6 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ceti.		*21 Cassiopeæ.		ε Piscium.		θ¹ Ceti.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$0^{h}\ 37^{m}$	$-18°\ 38'$	$0^{h}\ 37^{m}$	$+74°\ 19'$	$0^{h}\ 56^{m}$	$+7°\ 14'$	$1^{h}\ 17^{m}$	$-8°\ 48'$
	s	″	s	″	s	″	s	″
(Dec. 30.3)	28.62 −.12	85.8 −0.5	36.24 −.68	37.3 +0.3	37.45 −.10	5.7 −0.6	56.46 −.10	45.1 −0.7
Jan. 9.2	28.50 .12	86.2 0.3	35.56 .69	37.3 −0.3	37.34 .11	5.1 0.7	56.35 .11	45.8 0.6
19.2	28.39 .11	86.4 −0.1	34.88 .69	36.8 0.9	37.24 .11	4.4 0.7	56.23 .12	46.3 0.4
29.2	28.28 .10	86.3 +0.2	34.23 .62	35.6 1.4	37.13 .11	3.8 0.6	56.11 .12	46 6 −0.2
Feb. 8.1	28.18 .09	86.0 0.5	33.64 .55	33.9 1.9	37.03 .10	3.1 0.6	56.00 .11	46.8 0.0
18.1	28.10 .07	85.4 0.7	33.13 .45	31.7 2.4	36.94 .08	2.6 0.5	55.89 .09	46.7 +0.2
28.1	28.04 .04	84.5 1.0	32.74 .33	29.2 2.7	36.87 .06	2.1 0.4	55.81 .07	46.4 0.4
Mar. 10.1	28.01 −.01	83.3 1.3	32.47 .20	26.4 2.9	36.83 −.03	1.8 −0.2	55.74 .05	45.9 0.6
20.0	28.02 +.02	81.9 1.5	32.35 −.05	23.5 2.9	36.82 +.01	1.7 0.0	55.71 −.02	45.1 0.9
30.0	28.06 .06	80.3 1.8	32.38 +.10	20.6 2.9	36.85 .05	1.8 +0.2	55.71 +.02	44.1 1.1
Apr. 9.0	28.14 .10	78.4 2.0	32.56 .26	17.7 2.7	36.91 .09	2.1 0.4	55.75 .06	42.8 1.4
19.0	28.27 .14	76.4 2.1	32.89 .41	15.1 2.5	37.02 .13	2.6 0.7	55.84 .10	41.4 1.6
28.9	28.43 .19	74.1 2.3	33.36 .54	12.8 2.1	37.18 .17	3.5 1.0	55.96 .15	39.7 1.8
May 8.9	28.64 .22	71.8 2.4	33.96 .66	10.9 1.7	37.37 .21	4.6 1.2	56.13 .19	37.8 2.0
18.9	28.88 .26	69.4 2.4	34.67 .76	9.5 1.2	37.60 .25	5.9 1.4	56.34 .23	35.8 2.1
28.8	29.16 .29	67.0 2.4	35.47 .83	8.5 0.7	37.87 .28	7.4 1.6	56.58 .26	33.6 2.2
June 7.8	29.46 .31	64.6 2.3	36.33 .88	8.1 −0.1	38.16 .30	9.2 1.8	56.86 .28	31.4 2.2
17.8	29.78 .32	62.3 2.2	37.23 .91	8.3 +0.4	38.47 .32	11.0 1.9	57.15 .31	29.2 2.2
27.8	30.10 .33	60.2 2.0	38.15 .91	9.0 1.0	38.79 .32	13.0 2.0	57.47 .32	27.1 2.1
July 7.7	30.43 .33	58.2 1.8	39.06 .90	10.2 1.5	39.11 .32	15.0 2.0	57.79 .32	25.0 2.0
17.7	30.76 .32	56 6 1.5	39.93 .86	12.0 2.0	39.43 .31	17.0 2.0	58.10 .31	23.1 1.8
27.7	31.07 .30	55.2 1.2	40.76 .80	14.2 2.4	39.74 .30	19.0 1.9	58.41 .30	21.4 1.6
Aug. 6.7	31.35 .27	54.1 0.9	41.52 .72	16 8 2.8	40.02 .27	20.8 1.8	58.71 .28	20.0 1.3
16.6	31.61 .24	53.4 0.5	42.20 .63	19.7 3.1	40.28 .25	22.5 1.6	58.98 .26	18.8 1.0
26.6	31.83 .21	53.1 +0.2	42.79 .53	23 0 3.4	40.52 .21	24.1 1.4	59.22 .23	17.9 0.7
Sept. 5.6	32.02 .17	53.1 −0.2	43.27 .43	26.4 3.5	40.71 .18	25.4 1.2	59.44 .20	17.4 +0.4
15.5	32.17 .13	53.5 0.5	43.64 .32	30.0 3.7	40.88 .15	26.4 1.0	59.62 .16	17.2 0.0
25.5	32.28 .09	54.1 0.8	43.90 .20	33.7 3.7	41.01 .11	27.3 0.7	59.77 .13	17.3 −0.2
Oct. 5.5	32.35 .05	55.0 1.0	44.04 +.08	37.4 3.7	41.10 .08	27.9 0.5	59.88 .09	17.7 0.5
15.5	32.38 +.02	56.1 1.2	44.06 −.03	41.1 3.6	41.16 .05	28.3 0.3	59.96 .06	18.3 0.7
25.4	32.38 −.01	57.3 1.3	43.97 .15	44.6 3.4	41.20 +.02	28.6 +0.1	60.00 +.03	19.0 0.9
Nov. 4.4	32.35 .04	58.6 1.3	43.76 .26	47.8 3.1	41.20 −.01	28.6 −0.1	60.02 .00	20.0 1.0
14.4	32.30 .07	60.0 1.3	43.45 .37	50.8 2.8	41.18 .03	28.4 0.2	60.01 −.02	21.0 1.0
24.3	32.22 .09	61.3 1.2	43.03 .46	53.3 2.3	41,13 .05	28.1 0.3	59.97 .05	22.1 1.1
Dec. 4.3	32.13 .10	62.4 1.1	42.53 .54	55.4 1.8	41.07 .07	27.7 0.5	59.91 .07	23.1 1.0
14.3	32.02 .11	63.4 0.9	41.95 .61	57.0 1.3	40.99 .09	27.2 0.5	59.84 .08	24.1 1.0
24.3	31.91 .12	64.3 0.7	41.31 .66	58.0 0.7	40.90 .10	26.7 0 6	59.74 .10	25.0 0.9
34.2	31.79 −.12	64.9 −0.5	40.64 −.68	58.4 +0.1	40.79 −.11	26.0 −0.6	59.64 −.11	25.8 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*38 Cassiopeæ.				η Piscium.				α Eridani. (*Achernar.*)				o Piscium.			
	Right Ascension.		Declination *North.*		Right Ascension.		Declination *North.*		Right Ascension.		Declination *South.*		Right Ascension.		Declination *North.*	
	h m 1 22		+69° 38′		h m 1 24		+14° 43′		h m 1 33		−57° 50′		h m 1 38		+8° 32′	
	s		″		s		″		s		″		s		″	
(Dec. 30.3)	10.99	−.46	33.5	+0.8	58.16	−.10	10.0	−0.4	11.67	−.32	95.2	−0.7	58.16	−.10	43.3	−0.6
Jan. 9.3	10.51	.49	34.0	+0.2	58.05	.11	9.5	0.6	11.35	.33	95.6	−0.1	58.06	.11	42.7	0.6
19.2	10.01	.51	33.9	−0.4	57.93	.12	8.8	0.7	11.01	.33	95.4	+0.5	57.94	.12	42.1	0.6
29.2	9.51	.50	33.2	0.9	57.81	.12	8.1	0.7	10.68	.32	94.6	1.0	57.82	.12	41.5	0.6
Feb. 8.2	9.02	.46	32.0	1.5	57.69	.12	7.3	0.8	10.37	.30	93.4	1.5	57.70	.12	40.9	0.6
18.1	8.58	.41	30.3	1.9	57.58	.10	6.6	0.7	10.08	.27	91.6	2.0	57.59	.11	40.4	0.5
28.1	8.21	.34	28.2	2.3	57.49	.08	5.9	0.7	9.83	.23	89.4	2.4	57.49	.09	39.9	0.4
Mar. 10.1	7.92	.24	25.8	2.6	57.42	.05	5.2	0.6	9.61	.19	86.7	2.8	57.41	.06	39.6	0.3
20.1	7.73	.14	23.1	2.7	57.38	−.02	4.7	0.5	9.45	.13	83.8	3.1	57.36	−.03	39.4	−0.1
30.0	7.65	−.02	20.4	2.8	57.38	+.02	4.3	0.3	9.35	−.07	80.5	3.4	57.35	+.01	39.4	+0.1
Apr. 9.0	7.69	+.10	17.6	2.7	57.42	.06	4.1	−0.1	9.31	.00	77.1	3.5	57.38	.05	39.5	0.3
19.0	7.85	.22	15.0	2.5	57.51	.11	4.2	+0.2	9.35	+.07	73.5	3.6	57.45	.09	40.0	0.5
29.0	8.13	.34	12.6	2.3	57.64	.15	4.5	0.5	9.45	.14	69.9	3.6	57.56	.14	40.6	0.8
May 8.9	8.53	.45	10.5	1.9	57.81	.20	5.1	0.7	9.62	.20	66.3	3.6	57.72	.18	41.5	1.0
18.9	9.02	.54	8.8	1.5	58.03	.24	6.0	1.0	9.86	.27	62.8	3.4	57.92	.22	42.7	1.2
28.9	9.60	.62	7.5	1.0	58.29	.27	7.1	1.2	10.16	.33	59.4	3.2	58.16	.25	44.0	1.5
June 7.8	10.25	.68	6.7	−0.5	58.57	.30	8.4	1.5	10.52	.38	56.4	2.9	58.42	.28	45.6	1.6
17.8	10.96	.72	6.4	0.0	58.88	.32	10.0	1.6	10.92	.43	53.6	2.5	58.72	.30	47.3	1.8
27.8	11.69	.74	6.6	+0.5	59.20	.33	11.7	1.8	11.37	.46	51.3	2.1	59.02	.32	49,1	1.8
July 7.8	12.44	.75	7.3	1.0	59.53	.33	13.6	1.9	11.83	.48	49.4	1.6	59.35	.32	51.0	1.9
17.7	13.19	.74	8.6	1.5	59.86	.32	15.5	1.9	12.31	.48	48.0	1.1	59.68	.32	52.9	1.9
27.7	13.91	.71	10.3	1.9	60.18	.31	17.4	1.9	12.79	.47	47.2	+0.5	59.99	.31	54.7	1.8
Aug. 6.7	14.60	.67	12.4	2.3	60.48	.29	19.3	1.9	13.25	.45	46.9	0.0	60.30	.30	56.5	1.7
16.6	15.24	.61	14.8	2.6	60.77	.27	21.2	1.8	13.69	.42	47.2	−0.6	60.58	.27	58.2	1.6
26.6	15.82	.55	17.6	2.9	61.02	.24	22.9	1.7	14.09	.37	48.1	1.1	60.84	.25	59.7	1.4
Sept. 5.6	16.34	.47	20.7	3.2	61.25	.21	24.5	1.5	14.43	.32	49.5	1.6	61.07	.22	61.0	1.2
15.6	16.77	.39	24.0	3.3	61.44	.18	25.9	1.3	14.73	.26	51.4	2.1	61.28	.19	62.0	1.0
25.5	17.12	.31	27.4	3.4	61.61	.14	27.2	1.1	14.95	.19	53.7	2.5	61.45	.15	62.9	0.7
Oct. 5.5	17.39	.22	30.8	3.5	61.73	.11	28.2	0.9	15.11	.12	56.3	2.7	61.59	.12	63.5	0.5
15.5	17.56	.13	34.3	3.4	61.83	.08	29.0	0.7	15.19	+.05	59.1	2.9	61.69	.09	64.0	0.3
25.5	17.65	+.04	37.7	3.3	61.89	.05	29.6	0.5	15.21	−.02	62.0	2.9	61.77	.06	64.2	+0.1
Nov. 4.4	17.64	−.05	41.0	3.1	61.92	+.02	30.1	0.3	15.16	.09	64.9	2.9	61.81	+.03	64.2	0.0
14.4	17.55	.14	44.0	2.9	61.93	−.01	30.3	+0.2	15.04	.15	67.7	2.7	61.83	.00	64.1	−0.2
24.4	17.36	.23	46.7	2.5	61.91	.03	30.4	0.0	14.86	.20	70.3	2.4	61.82	−.02	63.9	0.3
Dec. 4.3	17.10	.30	49.1	2.1	61.87	.05	30.3	−0.2	14.64	.25	72.5	2.0	61.79	.04	63.5	0.4
14.3	16.75	.38	51.0	1.6	61.80	.08	30.1	0.3	14.38	.28	74.3	1.5	61.73	.07	63.0	0.5
24.3	16.35	.43	52.4	1.1	61.72	.10	29.7	0.4	14.08	.31	75.5	1.0	61.66	.09	62.5	0.5
34.3	15.89	−.47	53.2	+0.6	61.61	−.11	29.3	−0.5	13.76	−.33	76.3	−0.5	61.56	−.10	61.9	−0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Arietis.		*50 Cassiopeæ.		α Arietis.		ξ¹ Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$1^{h}\ 47^{m}$	$+20^{\circ}\ 12'$	$1^{h}\ 52^{m}$	$+71^{\circ}\ 49'$	$2^{h}\ 0^{m}$	$+22^{\circ}\ 53'$	$2^{h}\ 6^{m}$	$+8^{\circ}\ 16'$
	s	″	s	″	s	″	s	″
(Dec. 30.3)	55.11 −.10	52.5 −0.3	64.05 −.49	70.5 +1.2	18.94 −.10	18.8 −0.2	33.14 −.09	33.4 −0.6
Jan. 9.3	55.00 .12	52.2 0.5	63.53 .54	71.4 0.7	18.84 .12	18.5 0.4	33.04 .11	32.8 0.6
19.2	54.88 .13	51.6 0.6	62.97 .57	71.8 +0.1	18.71 .13	18.1 0.5	32.93 .12	32.3 0.6
29.2	54.75 .13	51.0 0.7	62.40 .58	71.6 −0.5	18.57 .14	17.4 0.7	32.80 .13	31.7 0.6
Feb. 8.2	54.61 .13	50.2 0.8	61.82 .56	70.8 1.1	18.43 .14	16.7 0.8	32.67 .13	31.1 0.5
18.2	54.49 .12	49.4 0.9	61.28 .52	69.4 1.6	18.30 .13	15.9 0.9	32.55 .12	30.6 0.5
28.2	54.37 .10	48.5 0.9	60.80 .45	67.6 2.0	18.17 .11	14.9 0.9	32.43 .11	30.2 0.4
Mar. 10.1	54.28 .08	47.6 0.8	60.40 .35	65.4 2.4	18.07 .09	14.0 0.9	32.33 .09	29.9 0.2
20.1	54.22 −.04	46.9 0.7	60.10 .24	62.9 2.6	18.00 .06	13.1 0.8	32.26 .06	29.7 −0.1
30.1	54.20 .00	46.2 0.6	59.92 −.12	60.3 2.7	17.96 −.01	12.4 0.7	32.22 −.02	29.7 +0.1
Apr. 9.0	54.22 +.04	45.7 0.4	59.87 +.02	57.5 2.8	17.97 +.03	11.7 0.6	32.22 +.02	29.9 0.3
19.0	54.28 .09	45.4 −0.2	59.95 .15	54.8 2.7	18.02 .08	11.2 0.4	32.26 .06	30.3 0.5
29.0	54.40 .14	45.3 +0.1	60.17 .29	52.2 2.5	18.13 .13	10.9 −0.1	32.35 .11	30.9 0.7
May 8.9	54.56 .18	45.5 0.3	60.52 .41	49.8 2.2	18.28 .17	10.9 +0.1	32.48 .15	31.7 1.0
18.9	54.76 .23	46.0 0.6	60.99 .53	47.8 1.9	18.48 .22	11.2 0.4	32.66 .20	32.8 1.2
28.9	55.01 .26	46.7 0.9	61.57 .62	46.1 1.4	18.71 .26	11.8 0.7	32.87 .23	34.1 1.4
June 7.9	55.28 .29	47.7 1.1	62.24 .71	44.9 1.0	18.99 .29	12.6 0.9	33.12 .27	35.6 1.5
17.8	55.59 .32	49.0 1.3	62.98 .77	44.1 −0.5	19.29 .32	13.6 1.2	33.40 .29	37.2 1.7
27.8	55.91 .33	50.4 1.5	63.77 .81	43.9 0.0	19.62 .33	14.9 1.4	33.70 .31	38.9 1.8
July 7.8	56.25 .34	52.1 1.7	64.59 .83	44.1 +0.5	19.96 .34	16.4 1.6	34.02 .32	40.7 1.8
17.8	56.59 .34	53.8 1.8	65.42 .83	44.9 1.0	20.30 .34	18.1 1.7	34.34 .32	42.5 1.8
27.7	56.92 .33	55.7 1.9	66.25 .82	46.1 1.4	20.64 .33	19.8 1.8	34.66 .32	44.3 1.7
Aug. 6.7	57.24 .31	57.5 1.9	67.06 .78	47.8 1.9	20.97 .32	21.6 1.8	34.97 .30	46.0 1.6
16.7	57.54 .29	59.4 1.8	67.82 .74	49.9 2.3	21.28 .30	23.5 1.8	35.26 .29	47.5 1.5
26.6	57.82 .26	61.2 1.8	68.53 .68	52.3 2.6	21.57 .28	25.3 1.8	35.54 .26	49.0 1.3
Sept. 5.6	58.07 .23	62.9 1.6	69.17 .61	55.1 2.9	21.84 .25	27.0 1.7	35.79 .24	50.2 1.1
15.6	58.29 .20	64.5 1.5	69.74 .53	58.1 3.1	22.07 .22	28.6 1.6	36.02 .21	51.2 0.9
25.6	58.48 .17	65.9 1.4	70.23 .44	61.3 3.3	22.28 .19	30.2 1.4	36.21 .18	52.0 0.7
Oct. 5.5	58.63 .14	67.2 1.2	70.62 .35	64.7 3.4	22.45 .15	31.5 1.3	36.38 .15	52.5 0.4
15.5	58.76 .11	68.3 1.0	70.92 .25	68.1 3.4	22.59 .12	32.8 1.1	36.51 .12	52.9 0.2
25.5	58.85 .07	69.2 0.8	71.11 .14	71.5 3.4	22.69 .09	33.8 1.0	36.61 .09	53.0 +0.1
Nov. 4.5	58.91 .04	70.0 0.6	71.20 +.04	74.9 3.3	22.77 .06	34.7 0.8	36.69 .06	53.0 −0.1
14.4	58.94 +.02	70.5 0.5	71.19 −.07	78.1 3.1	22.81 +.03	35.4 0.6	36.73 +.03	52.8 0.2
24.4	58.94 −.01	70.9 0.3	71.07 .17	81.0 2.8	22.83 .00	35.9 0.4	36.75 .00	52.5 0.4
Dec. 4.4	58.92 .04	71.1 +0.1	70.85 .27	83.7 2.5	22.81 −.03	36.3 0.3	36.73 −.03	52.1 0.4
14.3	58.86 .06	71.1 −0.1	70.53 .36	85.9 2.0	22.77 .06	36.5 +0.1	36.70 .05	51.6 0.5
24.3	58.79 .09	71.0 0.2	70.12 .44	87.7 1.5	22.70 .08	36.4 −0.1	36.63 .07	51.1 0.6
34.3	58.68 −.11	70.7 −0.4	69.64 −.51	89.0 +1.0	22.60 −.11	36.2 −0.3	36.55 −.10	50.5 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ι Cassiopeæ.		γ Ceti.		α Ceti.		*48 Cephei (H.)	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 2 19	° ′ +66 51	h m 2 36	° ′ +2 43	h m 2 55	° ′ +3 36	h m 3 4	° ′ +77 16
	s	″	s	″	s	″	s	″
(Dec. 30.3)	3.49 −.33	31.2 +1.4	60.11 −.07	21.9 −0.7	55.56 −.06	43.4 −0.7	57.86 −.54	83.0 +2.1
Jan. 9.3	3.13 .38	32.3 0.8	60.02 .10	21.2 0.7	55.49 .09	42.7 0.7	57.26 .66	84.9 1.6
19.2	2.73 .42	32.9 +0 3	59 91 .12	20.5 0.6	55.38 .11	42.1 0.6	56 54 .77	86.3 1.1
29.2	2.30 .44	32.9 −0.3	59.79 .13	19.9 0.5	55.26 .13	41.5 0.5	55.74 .83	87.1 +0.5
Feb. 8.2	1.85 .44	32.4 0.8	59.65 .14	19.5 0.4	55.13 .14	41.0 0.4	54.88 .86	87.3 −0.1
18.2	1.42 .42	31.3 1.3	59.52 .14	19.1 0.3	54.98 .14	40.6 0.3	54.02 .86	86.9 0.7
28.2	1.02 .38	29.8 1.7	59.38 .13	18.9 −0.2	54.84 .14	40.3 0.2	53.18 .81	86.0 1.2
Mar. 10.1	0.67 .31	27.9 2.1	59.26 .11	18.8 0.0	54.71 .12	40.2 −0.1	52.41 .72	84.5 1.7
20.1	0.40 .23	25.7 2.3	59.17 .08	18.8 +0.2	54.60 .10	40.2 +0.1	51.74 .60	82.6 2.1
30.1	0.21 .14	23.3 2.5	59.10 .05	19.1 0.3	54.52 .07	40.4 0.3	51.21 .46	80.3 2.5
Apr. 9.1	0.13 −.03	20.7 2.6	59.07 −.01	19.5 0.6	54.47 −.03	40.8 0.5	50.84 .29	77.7 2.7
19.0	0.15 +.07	18.1 2.5	59.08 +.03	20.2 0.8	54.47 +.01	41.4 0.7	50.64 −.10	75.0 2.8
29.0	0.28 .18	15.6 2.4	59.13 .08	21.1 1.0	54.50 .06	42.2 0.9	50.63 +.09	72.1 2.8
May 9.0	0.52 .29	13.3 2.2	59.23 .12	22.2 1.2	54.58 .10	43.2 1.1	50.81 .28	69.4 2.7
18.9	0.86 .39	11.3 1.9	59.38 .17	23.5 1.4	54.71 .15	44.4 1.3	51.18 .46	66.7 2 5
28.9	1.29 .47	9.6 1.5	59.56 .21	24.9 1.6	54.88 .19	45.7 1.4	51.72 .63	64.3 2.3
June 7.9	1.80 .55	8.3 1.1	59.79 .24	26.6 1.7	55.09 .23	47.2 1.6	52.43 .78	62.2 1.9
17.9	2.38 .61	7.4 0.6	60.04 .27	28.3 1.8	55.34 .26	48.9 1.7	53.27 .91	60.5 1.5
27.8	3.01 .65	7.0 −0.2	60.32 .29	30.1 1.8	55.61 .28	50.6 1.7	54.23 1.01	59.1 1.1
July 7.8	3.68 .68	7.0 +0.3	60.62 .31	31.9 1.8	55.90 .30	52.4 1.7	55.29 1.09	58.2 0.6
17.8	4.37 .69	7.5 0.7	60.94 .31	33.7 1.8	56.21 .31	54.1 1.7	56.41 1.15	57.8 −0.2
27.7	5.05 .68	8.5 1.2	61.25 .31	35.4 1.7	56.52 .31	55.8 1.6	57.57 1.18	57.9 +0.3
Aug. 6.7	5.73 .67	9.8 1.6	61.56 .31	37.0 1.5	56.83 .31	57.3 1.5	58.75 1.18	58.4 0.7
16.7	6.39 .64	11.6 1.9	61.86 .29	38.4 1.3	57.14 .30	58.7 1.3	59.92 1.16	59.4 1.2
26.7	7.00 .60	13.7 2.3	62.15 .28	39.7 1.1	57.43 .28	59.9 1.1	61.07 1.12	60.8 1.6
Sept. 5.6	7.58 .55	16.1 2.6	62.41 .25	40.6 0.8	57.70 .26	60.9 0.8	62.17 1.07	62.6 2.0
15.6	8.10 .49	18.8 2.8	62.65 .23	41.3 0.6	57.96 .24	61.6 0.6	63.20 .99	64.8 2.4
25.6	8.55 .43	21.7 3.0	62.87 .20	41.8 0.3	58.19 .22	62.0 0.3	64.14 .90	67.4 2.7
Oct. 5.6	8.95 .35	24.8 3.1	63.06 .17	42.0 +0.1	58.40 .19	62.2 +0.1	64.99 .79	70.2 2.9
15.5	9.26 .28	27.9 3.2	63.22 .15	42.0 −0.1	58.58 .17	62.2 −0.1	65.72 .66	73.2 3.1
25.5	9.50 .20	31.1 3.2	63.35 .12	41.7 0.4	58.73 .14	61.9 0.3	66.31 .52	76.4 3.3
Nov. 4.5	9.66 .12	34.3 3.1	63.45 .09	41.3 0.5	58.85 .11	61.5 0.5	66.76 .37	79.8 3.3
14.4	9.74 +.03	37.3 2.9	63.52 .06	40.7 0.6	58.94 .08	60.9 0.6	67.06 .21	83.1 3.3
24.4	9.73 −.05	40.1 2.7	63.57 +.03	40.0 0.7	59.00 .04	60.2 0.7	67.19 +.05	86.4 3.2
Dec. 4.4	9.63 .13	42.7 2.4	63.58 .00	39.2 0.8	59.03 +.01	59.5 0.8	67.15 −.12	89.5 3.0
14.4	9.46 .21	45.0 2.1	63.56 −.03	38.4 0.8	59.02 −.02	58.7 0.8	66.94 .29	92.4 2.8
24.3	9.20 .29	46.8 1.6	63.51 .06	37.6 0.8	58.99 .05	57.9 0.8	66.58 .45	95.0 2.4
34.3	8.88 −.35	48.2 +1.2	63.44 −.09	36.9 −0.8	58.93 −.08	57.2 −0.7	66.06 −.59	97.1 +1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Arietis.		α Persei.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 7	+20° 35′	h m 3 15	+49° 25′	h m 3 34	+47° 23′	h m 3 40	+23° 43′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	54.93 −.06	41.3 −0.1	38.97 −.10	49.2 +1.2	16.47 −.08	61.4 +1.2	15.70 −.03	47.7 +0.1
Jan. 9.3	54.86 .09	41.1 0.2	38.84 .15	50.3 0.8	16.36 .13	62.4 0.9	15.65 .07	47.8 0.0
19.3	54.75 .11	40.9 0.3	38.67 .19	50.9 0.5	16.22 .17	63.1 0.6	15.56 .11	47.7 −0.1
29.3	54.63 .14	40.5 0.4	38.46 .22	51.2 +0.1	16.03 .20	63.6 +0.2	15.44 .13	47.6 0.2
Feb. 8.2	54.48 .15	40.1 0.5	38.23 .24	51.1 −0.3	15.81 .23	63.6 −0.1	15.29 .15	47.3 0.3
18.2	54.33 .15	39.6 0.6	37.98 .25	50.7 0.6	15.58 .24	63.3 0.4	15.13 .16	46.9 0.4
28.2	54.17 .15	39.0 0.6	37.74 .24	49.8 1.0	15.34 .23	62.7 0.8	14.97 .17	46.4 0.5
Mar. 10.2	54.03 .13	38.4 0.6	37.51 .22	48.7 1.3	15.11 .22	61.7 1.1	14.80 .16	45.8 0.6
20.1	53.91 .11	37.8 0.6	37.31 .18	47.3 1.5	14.91 .19	60.5 1.3	14.66 .13	45.2 0.6
30.1	53.81 .08	37.2 0.5	37.15 .13	45.7 1.7	14.74 .14	59.1 1.5	14.54 .10	44.6 0.6
Apr. 9.1	53.76 −.04	36.7 0.4	37.05 .07	43.9 1.8	14.62 .09	57.5 1.6	14.45 .07	44.0 0.6
19.1	53.74 +.01	36.3 0.3	37.00 −.01	42.1 1.8	14.56 −.03	55.8 1.7	14.41 −.02	43.5 0.5
29.0	53.77 .06	36.1 −0.1	37.03 +.06	40.3 1.7	14.56 +.03	54.2 1.6	14.41 +.03	43.1 0.3
May 9.0	53.86 .11	36.1 +0.1	37.12 .13	38.7 1.6	14.63 .10	52.6 1.5	14.46 .08	42.8 −0.2
19.0	53.99 .15	36.2 0.3	37.28 .19	37.2 1.4	14.76 .16	51.2 1.4	14.56 .13	42.7 0.0
28.9	54.16 .20	36.6 0.5	37.51 .26	35.9 1.1	14.95 .23	49.9 1.2	14.71 .17	42.8 +0.1
June 7.9	54.38 .24	37.2 0.7	37.79 .31	34.9 0.9	15.21 .28	48.9 0.9	14.91 .22	43.0 0.3
17.9	54.64 .27	38.0 0.9	38.13 .36	34.2 0.6	15.52 .33	48.1 0.6	15.14 .25	43.4 0.5
27.9	54.93 .30	38.9 1.0	38.51 .40	33.8 −0.2	15.87 .37	47.6 −0.3	15.41 .28	44.1 0.7
July 7.8	55.24 .32	40.1 1.2	38.92 .43	33.7 +0.1	16.26 .40	47.5 0.0	15.71 .31	44.8 0.9
17.8	55.56 .33	41.3 1.3	39.36 .44	34.0 0.4	16.67 .42	47.6 +0.3	16.03 .32	45.8 1.0
27.8	55.89 .33	42.6 1.4	39.80 .45	34.6 0.7	17.10 .43	48.0 0.6	16.36 .33	46.8 1.1
Aug. 6.8	56.22 .33	44.0 1.4	40.26 .45	35.5 1.0	17.53 .44	48.7 0.8	16.70 .34	47.9 1.1
16.7	56.55 .32	45.4 1.4	40.71 .45	36.6 1.3	17.97 .43	49.7 1.1	17.03 .33	49.1 1.2
26.7	56.87 .31	46.8 1.3	41.15 .43	38.1 1.5	18.40 .42	50.8 1.3	17.37 .33	50.2 1.1
Sept. 5.7	57.17 .29	48.1 1.2	41.57 .41	39.7 1.7	18.82 .41	52.2 1.5	17.69 .31	51.4 1.1
15.6	57.45 .27	49.3 1.1	41.96 .38	41.5 1.9	19.21 .38	53.8 1.6	17.99 .29	52.4 1.0
25.6	57.71 .25	50.4 1.0	42.33 .35	43.4 2.0	19.59 .36	55.5 1.8	18.28 .28	53.4 1.0
Oct. 5.6	57.94 .22	51.3 0.9	42.66 .31	45.4 2.1	19.93 .33	57.3 1.8	18.54 .25	54.4 0.9
15.6	58.15 .19	52.2 0.8	42.96 .28	47.6 2.1	20.24 .29	59.2 1.9	18.78 .23	55.2 0.8
25.5	58.33 .16	52.9 0.6	43.21 .23	49.7 2.2	20.51 .25	61.1 1.9	19.00 .20	55.9 0.7
Nov. 4.5	58.47 .13	53.4 0.5	43.43 .19	51.9 2.1	20.75 .21	63.1 1.9	19.18 .17	56.5 0.6
14.5	58.59 .10	53.9 0.4	43.59 .14	54.0 2.1	20.93 .17	65.0 1.9	19.34 .14	57.0 0.5
24.5	58.67 .07	54.2 0.3	43.71 .09	56.0 2.0	21.08 .12	66.9 1.8	19.46 .10	57.5 0.4
Dec. 4.4	58.72 +.03	54.4 0.2	43.77 +.02	57.9 1.8	21.17 .06	68.6 1.7	19.54 .07	57.8 0.3
14.4	58.74 .00	54.5 +0.1	43.78 −.02	59.6 1.6	21.20 +.01	70.3 1.5	19.59 +.03	58.1 0.2
24.4	58.72 −.04	54.5 0.0	43.73 .07	61.1 1.3	21.18 −.04	71.7 1.3	19.60 −.01	58.3 +0.1
34.4	58.66 −.07	54.4 −0.2	43.63 −.12	62.2 +1.0	21.11 −.09	72.9 +1.1	19.57 −.05	58.4 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ^1 Eridani.		γ Tauri.		ϵ Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$3^h\ 46^m$	$+31^\circ\ 31'$	$3^h\ 52^m$	$-13^\circ\ 50'$	$4^h\ 12^m$	$+15^\circ\ 20'$	$4^h\ 21^m$	$+18^\circ\ 54'$
	s	″	s	″	s	″	s	″
(Dec. 30.4)	29.71 −.03	24.9 +0.5	21.94 −.05	79.5 −1.6	52.87 −.01	4.1 −0.3	31.46 .00	41.1 −0.1
Jan. 9.3	29.65 .08	25.4 0.3	21.88 .08	81.0 1.3	52.84 .05	3.8 0.3	31.44 −.04	41.0 0.1
19.3	29.56 .11	25.6 +0.1	21.78 .11	82.2 1.1	52.77 .08	3.5 0.3	31.37 .08	40.8 0.2
29.3	29.43 .14	25.7 0.0	21.65 .14	83.2 0.8	52.67 .11	3.2 0.3	31.28 .11	40.6 0.2
Feb. 8.3	29.27 .17	25.5 −0.2	21.51 .16	83.9 0.6	52.55 .14	2.8 0.3	31.15 .14	40.4 0.3
18.2	29.10 .18	25.2 0.4	21.34 .17	84.3 −0.3	52.40 .16	2.5 0.3	31.00 .16	40.1 0.3
28.2	28.91 .18	24.7 0.6	21.17 .17	84.4 0.0	52.24 .16	2.2 0.3	30.84 .17	39.8 0.3
Mar. 10.2	28.74 .17	24.1 0.7	21.01 .16	84.2 +0.3	52.07 .16	1.9 0.3	30.67 .16	39.5 0.3
20.2	28.57 .15	23.3 0.8	20.85 .15	83.7 0.6	51.92 .14	1.6 0.3	30.51 .15	39.1 0.3
30.1	28.44 .12	22.4 0.9	20.72 .12	83.0 0.9	51.79 .12	1.3 0.2	30.37 .13	38.8 0.3
Apr. 9.1	28.34 .08	21.5 0.9	20.61 .09	81.9 1.2	51.68 .09	1.1 −0.1	30.26 .10	38.5 0.3
19.1	28.29 −.03	20.6 0.9	20.54 .05	80.6 1.4	51.61 .05	1.1 0.0	30.18 .06	38.3 0.2
29.0	28.28 +.02	19.8 0.9	20.51 −.01	79.0 1.7	51.58 −.01	1.1 +0.1	30.14 −.01	38.1 −0.1
May 9.0	28.33 .07	19.1 0.7	20.52 +.04	77.2 1.9	51.60 +.04	1.2 0.2	30.15 +.03	38.0 0.0
19.0	28.43 .13	18.5 0.5	20.59 .08	75.3 2.1	51.67 .09	1.5 0.4	30.21 .08	38.1 +0.1
29.0	28.59 .18	18.0 0.3	20.69 .13	73.1 2.2	51.78 .13	2.0 0.5	30.32 .13	38.3 0.3
June 7.9	28.79 .22	17.8 −0.1	20.84 .17	70.9 2.3	51.93 .18	2.6 0.7	30.47 .17	38.7 0.4
17.9	29.03 .26	17.8 +0.1	21.03 .21	68.6 2.3	52.13 .21	3.3 0.8	30.66 .21	39.2 0.6
27.9	29.31 .30	18.0 0.3	21.25 .24	66.3 2.3	52.36 .25	4.2 0.9	30.89 .24	39.9 0.7
July 7.9	29.63 .33	18.4 0.5	21.51 .26	64.1 2.2	52.62 .27	5.2 1.0	31.15 .27	40.6 0.8
17.8	29.96 .34	19.0 0.7	21.78 .28	62.0 2.0	52.90 .29	6.2 1.1	31.44 .29	41.5 0.9
27.8	30.31 .36	19.8 0.8	22.07 .30	60.1 1.8	53.21 .31	7.3 1.1	31.74 .31	42.4 0.9
Aug. 6.8	30.67 .36	20.7 1.0	22.37 .30	58.5 1.5	53.52 .32	8.4 1.0	32.06 .32	43.3 0.9
16.7	31.03 .36	21.7 1.1	22.68 .30	57.2 1.2	53.84 .32	9.4 1.0	32.38 .32	44.2 0.9
26.7	31.38 .35	22.8 1.1	22.98 .30	56.2 0.8	54.15 .31	10.4 0.9	32.70 .32	45.1 0.8
Sept. 5.7	31.73 .34	23.9 1.2	23.27 .29	55.6 +0.4	54.46 .31	11.3 0.8	33.02 .31	45.9 0.8
15.7	32.06 .32	25.1 1.2	23.55 .27	55.4 0.0	54.77 .30	12.0 0.6	33.33 .30	46.7 0.7
25.6	32.37 .30	26.3 1.2	23.82 .25	55.6 −0.4	55.06 .28	12.5 0.5	33.63 .29	47.3 0.5
Oct. 5.6	32.66 .28	27.5 1.1	24.06 .23	56.2 0.8	55.33 .26	13.0 0.3	33.91 .27	47.7 0.4
15.6	32.92 .25	28.6 1.1	24.28 .21	57.2 1.1	55.58 .24	13.2 0.2	34.18 .25	48.1 0.3
25.6	33.16 .22	29.7 1.1	24.47 .18	58.4 1.4	55.82 .22	13.3 +0.1	34.42 .23	48.4 0.2
Nov. 4.5	33.36 .19	30.7 1.0	24.64 .15	60.0 1.6	56.02 .19	13.3 −0.1	34.64 .21	48.5 +0.1
14.5	33.54 .15	31.7 0.9	24.78 .12	61.7 1.8	56.20 .16	13.2 0.2	34.83 .18	48.6 0.0
24.5	33.67 .12	32.6 0.9	24.88 .08	63.5 1.9	56.35 .13	13.0 0.2	34.99 .14	48.6 0.0
Dec. 4.4	33.77 .08	33.4 0.8	24.94 .05	65.4 1.9	56.46 .09	12.8 0.3	35.12 .11	48.5 −0.1
14.4	33.82 +.03	34.1 0.7	24.97 +.01	67.2 1.8	56.53 .06	12.5 0.3	35.21 .07	48.4 0.1
24.4	33.83 −.01	34.8 0.5	24.97 −.02	69.0 1.7	56.57 +.02	12.2 0.3	35.25 +.02	48.3 0.1
34.4	33.80 −.05	35.2 +0.4	24.93 −.06	70.6 −1.5	56.57 −.03	11.8 −0.3	35.26 −.02	48.2 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)		*9 Camelopardalis.		ι Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 28	+16° 15′	h m 4 41	+66° 7′	h m 4 49	+32° 58′	h m 4 57	+15° 14′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	57.13 +.01	55.4 −0.3	59.56 −.05	73.7 +2.3	5.14 +.02	28.1 +0.7	37.92 +.02	6.6 −0.3
Jan. 9.4	57.11 −.04	55.1 0.3	59.46 .15	75.9 2.1	5.14 −.02	28.7 0.6	37.92 −.01	6.3 0.3
19.4	57.06 .07	54.9 0.3	59.27 .24	77.8 1.8	5.09 .07	29.3 0.5	37.89 .05	6.0 0.3
29.3	56.97 .11	54.6 0.3	58.99 .32	79.4 1.4	5.00 .11	29.7 0.3	37.81 .09	5.7 0.3
Feb. 8.3	56.84 .14	54.3 0.3	58.64 .38	80.6 0.9	4.86 .15	29.9 +0.2	37.70 .13	5.4 0.2
18.3	56.70 .16	54.0 0.3	58.23 .43	81.3 +0.5	4.70 .18	30.0 0.0	37.56 .15	5.2 0.2
28.2	56.53 .17	53.7 0.3	57.79 .45	81.5 0.0	4.51 .19	29.9 −0.2	37.41 .16	5.0 0.2
Mar. 10.2	56.37 .16	53.4 0.3	57.34 .45	81.2 −0.5	4.32 .19	29.6 0.3	37.24 .17	4.7 0.2
20.2	56.21 .15	53.2 0.3	56.90 .42	80.4 1.0	4.13 .18	29.2 0.5	37.07 .16	4.5 0.2
30.2	56.06 .13	52.9 0.2	56.51 .37	79.2 1.4	3.96 .16	28.7 0.6	36.92 .14	4.4 0.1
Apr. 9.1	55.95 .10	52.7 0.2	56.17 .30	77.6 1.8	3.81 .13	28.0 0.7	36.79 .12	4.2 −0.1
19.1	55.87 .06	52.6 −0.1	55.90 .22	75.7 2.0	3.70 .09	27.2 0.8	36.68 .08	4.2 0.0
29.1	55.82 −.02	52.5 0.0	55.72 .13	73.6 2.2	3.63 −.04	26.4 0.8	36.62 −.04	4.2 +0.1
May 9.1	55.83 +.02	52.6 +0.1	55.65 −.03	71.3 2.3	3.61 +.01	25.6 0.8	36.60 .00	4.3 0.2
19.0	55.87 .07	52.8 0.3	55.67 +.08	69.0 2.4	3.65 .06	24.8 0.7	36.62 +.04	4.5 0.3
29.0	55.97 .12	53.2 0.4	55.80 .18	66.6 2.3	3.74 .11	24.2 0.6	36.69 .09	4.9 0.4
June 8.0	56.11 .16	53.7 0.6	56.03 .28	64.3 2.2	3.88 .16	23.6 0.5	36.80 .13	5.3 0.5
17.9	56.29 .20	54.3 0.7	56.36 .37	62.2 2.0	4.06 .21	23.2 0.4	36.96 .17	5.9 0.6
27.9	56.51 .24	55.0 0.8	56.77 .45	60.3 1.8	4.29 .25	22.9 −0.2	37.15 .21	6.6 0.7
July 7.9	56.77 .26	55.9 0.9	57.26 .52	58.7 1.5	4.56 .28	22.8 0.0	37.38 .24	7.4 0.8
17.9	57.04 .29	56.8 0.9	57.81 .58	57.4 1.2	4.86 .31	22.8 +0.1	37.63 .27	8.2 0.8
27.8	57.34 .30	57.8 1.0	58.42 .63	56.4 0.8	5.18 .33	23.0 0.2	37.91 .29	9.0 0.8
Aug. 6.8	57.65 .31	58.7 0.9	59.07 .66	55.7 0.5	5.52 .35	23.3 0.4	38.20 .30	9.9 0.8
16.8	57.96 .32	59.6 0.9	59.74 .68	55.4 −0.1	5.88 .36	23.7 0.4	38.51 .31	10.6 0.7
26.8	58.28 .32	60.5 0.8	60.43 .69	55.5 +0.2	6.24 .36	24.2 0.5	38.82 .31	11.3 0.6
Sept. 5.7	58.59 .31	61.3 0.7	61.12 .69	55.9 0.6	6.60 .36	24.7 0.6	39.13 .31	11.9 0.5
15.7	58.90 .30	61.9 0.6	61.81 .68	56.6 0.9	6.95 .35	25.3 0.6	39.44 .31	12.4 0.4
25.7	59.20 .29	62.4 0.4	62.48 .66	57.7 1.2	7.30 .34	26.0 0.7	39.75 .30	12.7 0.2
Oct. 5.6	59.48 .27	62.8 0.3	63.12 .63	59.1 1.5	7.63 .33	26.6 0.7	40.04 .29	12.9 +0.1
15.6	59.75 .26	63.0 +0.1	63.73 .58	60.8 1.8	7.95 .31	27.3 0.7	40.32 .27	12.9 0.0
25.6	59.99 .23	63.0 0.0	64.29 .53	62.8 2.1	8.25 .29	28.0 0.7	40.59 .26	12.8 −0.2
Nov. 4.6	60.22 .21	63.0 −0.1	64.79 .47	64.9 2.3	8.53 .26	28.7 0.7	40.84 .23	12.6 0.3
14.5	60.41 .18	62.9 0.2	65.23 .39	67.3 2.4	8.77 .23	29.4 0.7	41.06 .21	12.3 0.4
24.5	60.58 .15	62.7 0.2	65.58 .31	69.8 2.5	8.98 .19	30.1 0.7	41.25 .18	11.9 0.4
Dec. 4.5	60.71 .11	62.4 0.3	65.84 .22	72.4 2.6	9.15 .15	30.9 0.7	41.41 .14	11.5 0.4
14.5	60.80 .07	62.1 0.3	66.01 .12	74.9 2.5	9.28 .10	31.6 0.7	41.53 .10	11.1 0.4
24.4	60.85 +.03	61.9 0.3	66.08 +.02	77.4 2.4	9.36 +.05	32.3 0.7	41.60 .06	10.6 0.4
34.4	60.86 −.01	61.6 −0.3	66.04 −.09	79.8 +2.2	9.39 .00	32.9 +0.6	41.64 +.01	10.2 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	*α* Aurigæ. (*Capella.*)		*β* Orionis. (*Rigel.*)		*β* Tauri.		*Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 7	+45° 52′	h m 5 8	−8° 20′	h m 5 18	+28° 30′	h m 5 23	+74° 57′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	43.31 +.05	30.3 +1.4	42.38 +.03	32.9 −1.7	37.00 +.05	18.7 +0.4	31.92 +.02	44.4 +2.8
Jan. 9.4	43.32 −.02	31.7 1.3	42.38 −.02	34.5 1.5	37.03 +.01	19.0 0.4	31.85 −.15	47.2 2.6
19.4	43.27 .08	32.9 1.1	42.34 .06	35.9 1.3	37.01 −.04	19.4 0.3	31.63 .30	49.7 2.4
29.4	43.16 .13	33.9 0.9	42.26 .10	37.1 1.1	36.94 .09	19.7 0.3	31.25 .45	51.9 2.0
Feb. 8.3	43.01 .18	34.7 0.6	42.14 .13	38.1 0.8	36.83 .13	19.9 0.2	30.75 .56	53.7 1.6
18.3	42.81 .21	35.2 0.4	42.00 .15	38.8 0.6	36.69 .16	20.1 +0.1	30.13 .66	55.0 1.1
28.3	42.58 .24	35.4 +0.1	41.84 .17	39.3 0.4	36.52 .18	20.1 0.0	29.44 .71	55.9 +0.6
Mar. 10.2	42.34 .24	35.3 −0.2	41.66 .18	39.5 −0.1	36.34 .19	20.0 −0.2	28.72 .74	56.2 0.0
20.2	42.10 .23	34.9 0.5	41.49 .17	39.5 +0.2	36.15 .18	19.8 0.3	27.98 .73	55.9 −0.5
30.2	41.88 .21	34.2 0.8	41.32 .16	39.2 0.4	35.97 .17	19.4 0.4	27.28 .68	55.1 1.0
Apr. 9.2	41.68 .18	33.3 1.0	41.18 .13	38.6 0.7	35.82 .14	19.0 0.5	26.64 .60	53.8 1.5
19.1	41.52 .13	32.2 1.2	41.06 .10	37.8 0.9	35.69 .11	18.5 0.5	26.09 .49	52.1 1.9
29.1	41.42 .08	30.9 1.3	40.97 .07	36.8 1.1	35.61 .06	18.0 0.5	25.66 .36	50.0 2.3
May 9.1	41.37 −.02	29.5 1.4	40.93 −.02	35.6 1.3	35.57 −.02	17.4 0.5	25.37 .22	47.6 2.5
19.1	41.38 +.04	28.0 1.4	40.92 +.02	34.2 1.5	35.57 +.03	16.9 0.5	25.22 −.07	45.1 2.6
29.0	41.45 .10	26.6 1.3	40.96 .06	32.6 1.7	35.63 .08	16.4 0.4	25.23 +.09	42.4 2.7
June 8.0	41.58 .16	25.3 1.3	41.04 .10	30.8 1.8	35.73 .13	16.1 0.3	25.39 .24	39.7 2.7
18.0	41.77 .22	24.0 1.2	41.17 .14	29.0 1.9	35.88 .17	15.8 0.2	25.71 .39	37.0 2.6
27.9	42.02 .27	22.9 1.0	41.33 .18	27.1 1.9	36.07 .21	15.6 −0.1	26.16 .52	34.5 2.4
July 7.9	42.31 .31	22.0 0.8	41.53 .21	25.2 1.9	36.30 .25	15.5 0.0	26.75 .65	32.2 2.2
17.9	42.64 .35	21.2 0.6	41.75 .24	23.4 1.8	36.57 .28	15.6 +0.1	27.46 .76	30.1 1.9
27.9	43.00 .38	20.7 0.4	42.00 .26	21.6 1.6	36.86 .30	15.7 0.2	28.26 .85	28.3 1.6
Aug. 6.8	43.39 .40	20.3 0.2	42.27 .27	20.1 1.4	37.17 .32	15.9 0.2	29.16 .93	26.8 1.3
16.8	43.80 .41	20.1 −0.1	42.55 .29	18.8 1.2	37.50 .33	16.1 0.3	30.12 .99	25.7 0.9
26.8	44.22 .42	20.2 +0.1	42.84 .29	17.8 0.9	37.83 .34	16.4 0.3	31.13 1.03	25.0 0.5
Sept. 5.8	44.64 .42	20.5 0.3	43.14 .29	17.1 0.5	38.17 .34	16.7 0.3	32.17 1.05	24.7 −0.1
15.7	45.07 .42	20.9 0.5	43.43 .29	16.7 +0.2	38.52 .34	17.1 0.3	33.22 1.06	24.8 +0.3
25.7	45.49 .41	21.4 0.6	43.72 .29	16.7 −0.2	38.86 .34	17.4 0.3	34.28 1.05	25.2 0.7
Oct. 5.7	45.90 .40	22.1 0.8	44.00 .28	17.1 0.6	39.19 .33	17.7 0.3	35.31 1.02	26.1 1.1
15.6	46.29 .38	23.0 0.9	44.27 .26	17.9 0.9	39.51 .32	17.9 0.3	36.31 .97	27.3 1.4
25 6	46.66 .36	24.0 1.1	44.52 .24	18.9 1.2	39.82 .30	18.2 0.3	37.24 .90	28.9 1.8
Nov. 4.6	47.00 .33	25.1 1.2	44.75 .22	20.3 1.5	40.11 .28	18.5 0.3	38.11 .82	30.9 2.1
14.6	47.31 .29	26.3 1.3	44.96 .20	21.9 1.7	40.37 .25	18.7 0.3	38.87 .71	33.1 2.4
24.5	47.58 .25	27.6 1.4	45.14 .16	23.6 1.8	40.60 .22	19.0 0.3	39.52 .58	35.6 2.6
Dec. 4.5	47.81 .20	29.0 1.4	45.29 .13	25.4 1.8	40.80 .18	19.3 0.3	40.03 .44	38.3 2.8
14.5	47.98 .14	30.5 1.4	45.40 .09	27.3 1.8	40.96 .13	19.7 0.3	40.40 .29	41.2 2.9
24.5	48.09 .08	31.9 1.4	45.47 +.05	29.1 1.8	41.07 .08	20.0 0.4	40.60 +.12	44.0 2.8
34.4	48.14 +.01	33.3 +1.3	45.49 .00	30.8 −1.6	41.13 +.04	20.4 +0.4	40.64 −.05	46.8 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 25	° ′ −0 23	h m 5 27	° ′ −17 54	h m 5 30	° ′ −1 16	h m 5 35	° ′ −34 7
	s	″	s	″	s	″	s	″
(Dec. 30.4)	48.40 +.05	21.6 −1.3	22.97 +.03	34.2 −2.2	3.31 +.05	46.7 −1.4	16.02 +.01	80.5 −2.9
Jan. 9.4	48.43 .00	22.9 1.2	22.98 −.02	36.3 2.0	3.34 .00	48.0 1.2	16.00 −.04	83.3 2.6
19.4	48.41 −.04	24.0 1.0	22.94 .06	38.2 1.8	3.32 −.04	49.1 1.1	15.93 .09	85.7 2.3
29.4	48.35 .08	25.0 0.9	22.86 .10	39.8 1.5	3.26 .08	50.2 0.9	15.81 .14	87.9 2.0
Feb. 8.3	48.25 .12	25.8 0.7	22.74 .14	41.2 1.2	3.16 .11	51.0 0.7	15.65 .18	89.7 1.6
18.3	48.12 .14	26.4 0.5	22.59 .16	42.2 0.8	3.03 .14	51.6 0.5	15.46 .21	91.0 1.1
28.3	47.96 .16	26.8 0.3	22.41 .18	42.8 0.5	2.88 .16	52.1 0.4	15.24 .23	92.0 0.7
Mar. 10.3	47.80 .17	27.0 −0.1	22.22 .19	43.2 −0.2	2.72 .17	52.4 −0.2	15.01 .24	92.4 −0.2
20.2	47.63 .17	27.1 0.0	22.03 .19	43.2 +0.2	2.55 .17	52.4 0.0	14.77 .24	92.4 +0.2
30.2	47.46 .16	27.0 +0.2	21.85 .18	42.8 0.5	2.38 .16	52.3 +0.2	14.54 .23	92.0 0.6
Apr. 9.2	47.32 .13	26.7 0.4	21.68 .16	42.2 0.8	2.23 .14	52.0 0.4	14.32 .20	91.1 1.1
19.1	47.20 .11	26.3 0.5	21.54 .13	41.2 1.1	2.11 .11	51.5 0.6	14.13 .17	89.8 1.5
29.1	47.11 .07	25.6 0.7	21.43 .09	39.9 1.4	2.02 .07	50.9 0.8	13.98 .14	88.2 1.8
May 9.1	47.06 −.03	24.8 0.9	21.36 .05	38.4 1.7	1.96 −.03	50.0 0.9	13.86 .09	86.2 2.1
19.1	47.05 +.01	23.8 1.1	21.33 −.01	36.6 1.9	1.95 +.01	49.0 1.1	13.79 −.05	83.9 2.4
29.0	47.08 .05	22.7 1.2	21.34 +.03	34.6 2.1	1.97 .05	47.8 1.2	13.76 .00	81.4 2.6
June 8.0	47.15 .09	21.4 1.3	21.39 .08	32.5 2.2	2.04 .09	46.5 1.4	13.79 +.05	78.6 2.8
18.0	47.27 .13	20.0 1.4	21.49 .12	30.3 2.3	2.15 .13	45.1 1.4	13.86 .09	75.8 2.9
28.0	47.42 .17	18.6 1.5	21.63 .16	28.0 2.3	2.30 .16	43.7 1.5	13.97 .14	72.9 2.9
July 7.9	47.61 .20	17.1 1.5	21.80 .19	25.7 2.2	2.48 .20	42.2 1.5	14.13 .18	70.1 2.8
17.9	47.82 .23	15.7 1.4	22.01 .22	23.5 2.1	2.70 .23	40.7 1.4	14.33 .22	67.4 2.6
27.9	48.07 .25	14.3 1.3	22.24 .25	21.5 1.9	2.94 .25	39.3 1.3	14.57 .25	64.8 2.4
Aug. 6.8	48.33 .27	13.0 1.2	22.50 .27	19.7 1.7	3.19 .27	38.0 1.2	14.83 .27	62.6 2.1
16.8	46.60 .28	12.0 1.0	22.77 .28	18.1 1.4	3.47 .28	36.9 1.0	15.12 .30	60.7 1.7
26.8	48.89 .29	11.1 0.8	23.06 .29	16.9 1.0	3.75 .29	36.0 0.8	15.42 .31	59.3 1.2
Sept. 5.8	49.18 .30	10.4 0.5	23.36 .30	16.1 0.6	4.05 .29	35.4 0.5	15.74 .32	58.3 0.7
15.7	49.48 .29	10.1 +0.2	23.66 .30	15.7 +0.1	4.34 .29	35.0 +0.2	16.06 .32	57.9 +0.1
25.7	49.77 .29	10.1 −0.1	23.95 .29	15.8 −0.3	4.63 .29	35.0 −0.1	16.39 .32	58.0 −0.4
Oct. 5.7	50.06 .28	10.3 0.4	24.24 .29	16.4 0.7	4.92 .29	35.3 0.4	16.71 .31	58.7 1.0
15.7	50.34 .27	10.9 0.7	24.52 .27	17.3 1.2	5.20 .28	35.8 0.7	17.02 .30	60.0 1.5
25.6	50.61 .26	11.7 0.9	24.79 .26	18.7 1.6	5.47 .26	36.7 1.0	17.31 .28	61.7 2.0
Nov. 4.6	50.86 .24	12.7 1.2	25.04 .23	20.4 1.9	5.73 .24	37.8 1.2	17.57 .25	63.9 2.4
14.6	51.09 .21	14.0 1.3	25.26 .21	22.5 2.1	5.96 .22	39.1 1.4	17.81 .22	66.5 2.7
24.5	51.29 .18	15.3 1.4	25.45 .18	24.7 2.3	6.16 .19	40.5 1.5	18.01 .18	69.3 2.9
Dec. 4.5	51.46 .15	16.8 1.5	25.61 .14	27.0 2.4	6.33 .15	42.0 1.5	18.17 .14	72.3 3.1
14.5	51.59 .11	18.2 1.4	25.73 .10	29.4 2.4	6.47 .12	43.6 1.5	18.28 .09	75.4 3.1
24.5	51.68 .07	19.7 1.4	25.81 .05	31.8 2.3	6.56 .08	45.0 1.5	18.34 +.04	78.5 3.0
34.4	51.73 +.03	21.0 −1.3	25.84 +.01	34.0 −2.1	6.62 +.03	46.5 −1.3	18.36 −.01	81.4 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		*22 Camelop. (H.)		μ Geminorum.		α Argus. (*Canopus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 5 48	° ′ +7 23	h m 6 5	° ′ +69 21	h m 6 15	° ′ +22 34	h m 6 21	° ′ −52 37
	s	″	s	″	s	″	s	″
(Dec. 30.5)	36.04 +.07	4.4 −1.0	28.97 +.15	42.8 +2.6	37.04 +.11	34.5 −0.1	17.17 +.02	42.1 −3.5
Jan. 9.5	36.09 +.03	3.5 0.8	29.06 +.03	45.3 2.5	37.13 .06	34.5 0.0	17.15 −.05	45.6 3.4
19.4	36.10 −.02	2.7 0.7	29.03 −.10	47.8 2.4	37.16 +.01	34.5 +0.1	17.06 .12	48.9 3.1
29.4	36.06 .06	2.0 0.6	28.87 .22	50.1 2.2	37.15 −.04	34.6 0.1	16.91 .19	51.8 2.8
Feb. 8.4	35.98 .10	1.5 0.5	28.60 .32	52.1 1.8	37.08 .06	34.7 0.1	16.69 .24	54.4 2.3
18.3	35.86 .13	1.0 0.4	28.23 .41	53.7 1.4	36.98 .12	34.8 0.1	16.42 .29	56.5 1.9
28.3	35.71 .15	0.7 0.3	27.78 .48	55.0 1.0	36.84 .15	35.0 0.1	16.11 .32	58.1 1.4
Mar. 10.3	35.55 .17	0.5 −0.1	27.28 .52	55 7 +0.5	36.68 .17	35.0 +0.1	15.78 .35	59.2 0.9
20.3	35.38 .17	0.4 0.0	26.76 .53	56.0 0.0	36.50 .18	35.1 0.0	15.42 .36	59.8 −0.3
30.2	35.22 .16	0.4 0.0	26.23 .51	55.7 −0.5	36.33 .17	35.1 0.0	15.06 .35	59.9 +0.2
Apr. 9.2	35.07 .14	0.5 +0.2	25.74 .47	55.0 1.0	36.16 .16	35.0 −0.1	14.72 .34	59.4 0.7
19.2	34.94 .12	0.7 0.3	25.29 .41	53.8 1.4	36.01 .13	34.9 0.1	14.39 .31	58.5 1.2
29.2	34.84 .08	1.1 0.4	24.92 .33	52.2 1.8	35.89 .10	34.7 0.2	14.10 .27	57.1 1.6
May 9.1	34.78 −.04	1.5 0.5	24.63 .23	50.3 2.1	35.81 .06	34.5 0.2	13.85 .23	55.2 2.1
19.1	34.75 .00	2.1 0.6	24.45 .13	48.1 2.3	35.77 −.02	34.4 0.2	13.64 .18	53.0 2.4
29.1	34.77 +.04	2.7 0.7	24.38 −.02	45.7 2.4	35.77 +.02	34.2 0.1	13.50 .12	50.4 2.7
June 8.0	34.83 .08	3.5 0.8	24.41 +.09	43.2 2.5	35.81 .07	34.1 0.1	13.41 −.06	47.6 3.0
18.0	34.93 .12	4.4 0.9	24.56 .20	40.7 2.5	35.90 .11	34.0 −0.1	13.38 .00	44.5 3.1
28.0	35.07 .16	5.3 1.0	24.82 .31	38.2 2.5	36.03 .15	33.9 0.0	13.41 +.06	41.4 3.2
July 8.0	35.25 .19	6.3 1.0	25.17 .40	35.8 2.3	36.20 .18	33.9 0.0	13.50 .12	38.2 3.2
17.9	35.45 .22	7.2 1.0	25.62 .49	33.5 2.2	36.40 .22	33.9 0.0	13.65 .18	35.0 3.1
27.9	35.68 .24	8.2 0.9	26.16 .57	31.5 1.9	36.63 .24	34.0 +0.1	13.85 .23	32.0 2.9
Aug. 6.9	35.94 .26	9.1 0.8	26.76 .64	29.7 1.7	36.89 .27	34.1 0.0	14.11 .28	29.3 2.6
16.9	36.21 .28	9.9 0.7	27.43 .69	28.1 1.4	37.17 .29	34.1 0.0	14.41 .32	26.9 2.2
26.8	36.49 .29	10.5 0.5	28.15 .74	26.9 1.1	37.46 .30	34.1 0.0	14.75 .36	24.9 1.7
Sept. 5.8	36.79 .30	10.9 0.3	28.90 .77	26.0 0.7	37.77 .31	34.1 −0.1	15.12 .38	23.5 1.2
15.8	37.09 .30	11.2 +0.1	29.68 .79	25.4 −0.4	38.09 .32	34.0 0.1	15.51 .40	22.6 +0.6
25.7	37.39 .30	11.2 −0.1	30.47 .80	25.2 0.0	38.41 .33	33.8 0.2	15.92 .41	22.3 −0.1
Oct. 5.7	37.69 .30	11.0 0.3	31.27 .79	25.3 +0.3	38.74 .33	33.6 0.3	16.33 .41	22.7 0.7
15.7	37.98 .29	10.5 0.5	32.06 .77	25.8 0.7	39.07 .33	33.2 0.3	16.74 .40	23.7 1.3
25.7	38.27 .28	9.9 0.7	32.82 .74	26.7 1.1	39.39 .32	32.9 0.4	17.13 .38	25.4 1.9
Nov. 4.6	38.54 .26	9.1 0.9	33.54 .69	28.0 1.4	39.70 .30	32.5 0.4	17.50 .35	27.6 2.5
14.6	38.79 .24	8.2 1.0	34.20 .63	29.5 1.7	40.00 .28	32.1 0.4	17.83 .31	30.3 2.9
24.6	39.02 .21	7.1 1.1	34.80 .55	31.4 2.0	40.27 .26	31.7 0.4	18.11 .26	33.4 3.3
Dec. 4.6	39.22 .18	6.0 1.1	35.30 .46	33.6 2.3	40.51 .23	31.3 0.3	18.34 .20	36.8 3.5
14.5	39.38 .14	5.0 1.1	35.71 .35	35.9 2.4	40.72 .19	31.1 0.2	18.50 .13	40.4 3.6
24.5	39.50 .10	3.9 1.0	36.00 .23	38.4 2.5	40.88 .14	30.9 0.2	18.60 +.06	44.0 3.6
34.5	39.58 +.06	3.0 −0.9	36.17 +.11	41.0 +2.7	41.00 +.09	30.7 −0.1	18.63 .00	47.6 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.		δ Canis Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 30	° ′ +16 30	h m 6 39	° ′ −16 32	h m 6 53	° ′ −28 48	h m 7 3	° ′ −26 11
	s	″	s	″	s	″	s	″
(Dec. 30.5)	42.00 +.12	12.1 −0.5	48.18 +.10	56.7 −2.4	51.92 +.10	20.2 −3.0	27.85 +.12	55.1 −2.9
Jan. 9.5	42.10 .07	11.7 0.4	48.26 +.05	59.1 2.3	52.00 +.05	23.2 2.9	27.94 .06	58.0 2.8
19.4	42.15 +.02	11.3 0.3	48.28 .00	61.3 2.1	52.02 .00	26.0 2.7	27.98 +.01	60.7 2.6
29.4	42.15 −.02	11.1 0.2	48.26 −.04	63.3 1.9	51.99 −.05	28.5 2.4	27.96 −.04	63.2 2.4
Feb. 8.4	42.10 .07	11.0 0.1	48.19 .09	65.1 1.6	51.92 −.10	30.8 2.1	27.90 .09	65.5 2.1
18.4	42.01 .11	10.9 −0.1	48.09 .13	66.5 1.3	51.79 .14	32.7 1.7	27.79 .13	67.4 1.7
28.3	41.88 .14	10.8 0.0	47.94 .16	67.6 1.0	51.63 .18	34.2 1.3	27.65 .16	68.9 1.4
Mar. 10.3	41.73 .16	10.8 0.0	47.78 .17	68.4 0.7	51.44 .20	35.4 0.9	27.47 .19	70.1 1.0
20.3	41.56 .17	10.9 0.0	47.60 .19	68.9 −0.3	51.24 .21	36.1 0.5	27.28 .20	70.9 0.6
30.3	41.39 .17	10.9 0.0	47.41 .19	69.1 0.0	51.03 .21	36.5 −0.1	27.07 .20	71.2 −0.2
Apr. 9.2	41.23 .16	10.9 0.0	47.23 .18	68.9 +0.3	50.82 .21	36.4 +0.3	26.87 .20	71.2 +0.2
19.2	41.08 .14	11.0 0.0	47.06 .16	68.5 0.6	50.62 .19	35.9 0.7	26.68 .18	70.8 0.6
29.2	40.96 .11	11.0 +0.1	46.91 .13	67.7 0.9	50.44 .16	35.0 1.0	26.51 .16	70.1 0.9
May 9.2	40.87 .07	11.1 0.1	46.80 .10	66.7 1.2	50.29 .13	33.8 1.4	26.36 .13	69.0 1.3
19.1	40.82 −.03	11.2 0.1	46.71 .07	65.4 1.4	50.17 .10	32.3 1.7	26.24 .10	67.5 1.6
29.1	40.80 +.01	11.3 0.2	46.67 −.03	63.8 1.6	50.09 .06	30.4 2.0	26.16 .06	65.8 1.8
June 8.1	40.83 .05	11.5 0.2	46.66 +.01	62.1 1.8	50.05 −.02	28.3 2.2	26.12 −.02	63.9 2.1
18.0	40.90 .09	11.8 0.2	46.69 .05	60.3 1.9	50.05 +.02	26.0 2.4	26.12 +.02	61.7 2.2
28.0	41.01 .13	12.0 0.3	46.76 .09	58.3 2.0	50.09 .06	23.6 2.5	26.15 .06	59.4 2.4
July 8.0	41.16 .16	12.3 0.3	46.87 .12	56.3 2.0	50.18 .10	21.1 2.5	26.23 .09	57.0 2.4
18.0	41.33 .19	12.6 0.3	47.01 .16	54.3 1.9	50.30 .14	18.6 2.5	26.34 .13	54.7 2.3
27.9	41.54 .22	12.9 0.3	47.18 .19	52.4 1.8	50.46 .17	16.2 2.3	26.49 .17	52.3 2.2
Aug. 6.9	41.78 .25	13.2 0.2	47.39 .21	50.7 1.7	50.65 .20	13.9 2.1	26.68 .20	50.2 2.1
16.9	42.04 .27	13.4 0.2	47.61 .24	49.1 1.4	50.87 .23	11.9 1.8	26.89 .22	48.3 1.8
26.8	42.31 .28	13.6 +0.1	47.86 .26	47.9 1.1	51.11 .26	10.2 1.5	27.12 .25	46.6 1.4
Sept. 5.8	42.60 .30	13.6 0.0	48.13 .27	47.0 0.7	51.39 .28	9.0 1.0	27.39 .27	45.4 1.0
15.8	42.90 .31	13.5 −0.2	48.41 .29	46.5 +0.3	51.68 .30	8.2 0.6	27.67 .29	44.6 0.6
25.8	43.21 .31	13.3 0.3	48.70 .30	46.4 −0.1	51.98 .31	7.8 +0.1	27.97 .30	44.3 +0.1
Oct. 5.7	43.53 .32	12.9 0.4	49.00 .30	46.8 0.6	52.30 .32	8.0 −0.5	28.28 .31	44.4 −0.4
15.7	43.85 .32	12.4 0.5	49.30 .30	47.6 1.0	52.62 .32	8.8 1.0	28.59 .32	45.1 0.9
25.7	44.16 .31	11.8 0.6	49.60 .30	48.9 1.4	52.94 .32	10.1 1.5	28.91 .31	46.3 1.4
Nov. 4.7	44.47 .30	11.1 0.7	49.89 .28	50.5 1.8	53.25 .30	11.8 2.0	29.22 .31	48.0 1.9
14.6	44.76 .28	10.3 0.8	50.17 .27	52.5 2.1	53.54 .28	14.0 2.4	29.52 .29	50.1 2.3
24.6	45.04 .26	9.6 0.8	50.42 .24	54.7 2.3	53.81 .26	16.6 2.7	29.79 .26	52.6 2.6
Dec. 4.6	45.28 .23	8.8 0.7	50.65 .21	57.1 2.5	54.05 .22	19.4 2.9	30.04 .23	55.3 2.8
14.5	45.49 .19	8.1 0.7	50.84 .17	59.6 2.6	54.26 .18	22.4 3.0	30.25 .19	58.2 3.0
24.5	45.66 .15	7.5 0.6	50.99 .13	62.2 2.5	54.41 .13	25.4 3.1	30.43 .15	61.2 3.0
34.5	45.79 +.10	6.9 −0.5	51.09 +.08	64.7 −2.4	54.52 +.08	28.5 −3.0	30.55 +.10	64.1 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Geminorum.		* Piazzi vii. 67.		α Geminorum. (*Castor.*)		α Canis Minoris. (*Procyon.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 12	+22° 12′	h m 7 18	+68° 42′	h m 7 26	+32° 9′	h m 7 32	+5° 32′
	s	″	s	″	s	″	s	″
(Dec. 30.5)	52.44 +.18	22.6 −0.3	15.71 +.34	42.7 +2.3	51.01 +.20	16.8 +0.2	56.98 +.17	13.0 −1.4
Jan. 9.5	52.59 .12	22.4 0.1	15.99 .22	45.1 2.5	51.18 .15	17.2 0.4	57.13 .12	11.7 1.3
19.5	52.68 .07	22.3 −0.1	16.14 +.09	47.6 2.5	51.30 .09	17.7 0.6	57.23 .07	10.5 1.1
29.5	52.72 +.01	22.4 +0.1	16.17 −.04	50.1 2.5	51.36 +.03	18.3 0.7	57.28 +.02	9.4 0.9
Feb. 8.4	52.71 −.04	22.5 0.2	16.06 .16	52.5 2.3	51.36 −.03	19.0 0.7	57.28 −.02	8.6 0.7
18.4	52.65 .08	22.8 0.2	15.85 .27	54.6 2.1	51.31 .08	19.8 0.7	57.24 .07	8.0 0.6
28.4	52.54 .12	23.0 0.3	15.53 .36	56.6 1.7	51.21 .12	20.5 0.7	57.15 .10	7.5 0.4
Mar. 10.3	52.41 .15	23.3 0.3	15.12 .43	58.1 1.3	51.07 .16	21.1 0.6	57.03 .13	7.2 0.2
20.3	52.25 .17	23.6 0.2	14.66 .48	59.2 0.9	50.90 .18	21.7 0.5	56.88 .15	7.0 −0.1
30.3	52.08 .17	23.8 0.2	14.17 .50	59.9 +0.4	50.72 .19	22.1 0.3	56.73 .16	7.0 0.0
Apr. 9.3	51.91 .17	23.9 0.1	13.67 .50	60.1 −0.1	50.53 .19	22.3 +0.2	56.56 .16	7.0 +0.1
19.2	51.74 .15	24.0 +0.1	13.18 .47	59.7 0.6	50.35 .17	22.4 0.0	56.41 .15	7.2 0.2
29.2	51.60 .13	24.1 0.0	12.73 .42	58.9 1.0	50.18 .15	22.3 −0.2	56.27 .13	7.5 0.3
May 9.2	51.49 .10	24.0 0.0	12.34 .36	57.7 1.4	50.04 .12	22.1 0.3	56.15 .10	7.9 0.4
19.1	51.40 .06	24.0 −0.1	12.02 .28	56.1 1.8	49.94 .09	21.7 0.4	56.06 .08	8.3 0.5
29.1	51.36 −.03	23.9 0.1	11.79 .18	54.1 2.1	49.87 −.05	21.3 0.5	56.00 .04	8.9 0.6
June 8.1	51.35 +.01	23.7 0.1	11.65 −.09	51.9 2.3	49.85 .00	20.7 0.6	55.97 −.01	9.4 0.6
18.1	51.38 .05	23.6 0.1	11.61 +.01	49.4 2.5	49.87 +.04	20.0 0.7	55.98 +.03	10.1 0.7
28.0	51.45 .09	23.4 0.2	11.68 .11	46.8 2.6	49.93 .08	19.2 0.8	56.03 .06	10.8 0.7
July 8.0	51.57 .13	23.3 0.2	11.84 .21	44.2 2.6	50.03 .12	18.4 0.8	56.10 .09	11.5 0.7
18.0	51.71 .16	23.1 0.2	12.10 .31	41.5 2.6	50.16 .16	17.6 0.8	56.21 .12	12.2 0.7
28.0	51.89 .19	22.9 0.2	12.45 .39	38.9 2.5	50.34 .19	16.8 0.8	56.35 .15	12.9 0.6
Aug. 6.9	52.09 .22	22.6 0.3	12.88 .47	36.5 2.4	50.55 .23	15.9 0.9	56.52 .18	13.5 0.5
16.9	52.33 .24	22.3 0.3	13.39 .54	34.1 2.3	50.79 .25	15.1 0.9	56.72 .21	13.9 0.4
26.9	52.58 .27	22.0 0.4	13.96 .61	32.0 2.0	51.06 .28	14.2 0.9	56.93 .23	14.2 +0.2
Sept. 5.9	52.86 .29	21.6 0.4	14.60 .66	30.0 1.8	51.34 .30	13.3 0.9	57.17 .25	14.3 0.0
15.8	53.16 .30	21.1 0.5	15.28 .71	28.4 1.5	51.66 .32	12.4 0.9	57.43 .27	14.2 −0.2
25.8	53.47 .32	20.5 0.6	16.01 .74	27.1 1.2	51.98 .34	11.5 0.9	57.71 .28	13.9 0.5
Oct. 5.8	53.79 .33	19.8 0.7	16.76 .76	26.0 0.8	52.33 .35	10.6 0.9	58.00 .30	13.3 0.7
15.7	54.12 .33	19.1 0.8	17.53 .78	25.4 0.5	52.69 .36	9.7 0.8	58.30 .31	12.5 1.0
25.7	54.45 .33	18.3 0.8	18.31 .78	25.1 −0.1	53.05 .36	8.9 0.8	58.61 .31	11.4 1.2
Nov. 4.7	54.79 .33	17.4 0.8	19.08 .76	25.3 +0.4	53.41 .36	8.2 0.7	59.93 .31	10.1 1.4
14.7	55.11 .32	16.6 0.8	19.82 .72	25.8 0.8	53.78 .36	7.6 0.6	59.23 .30	8.7 1.5
24.6	55.42 .30	15.8 0.7	20.51 .67	26.8 1.2	54.12 .34	7.1 0.4	59.53 .29	7.1 1.6
Dec. 4.6	55.71 .27	15.1 0.6	21.15 .60	28.2 1.5	54.45 .31	6.7 −0.2	59.81 .26	5.5 1.6
14.6	55.97 .24	14.5 0.5	21.71 .51	29.9 1.9	54.74 .27	6.6 0.0	60.06 .23	3.9 1.6
24.6	56.19 .20	14.1 0.4	22.17 .41	31.9 2.1	54.99 .23	6.6 +0.1	60.27 .20	2.4 1.5
34.5	56.36 +.15	13.8 −0.2	22.52 +.29	34.2 +2.4	55.20 + 18	6.9 +0.3	60.45 +.15	0.9 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β* Geminorum. (*Pollux.*)		*ϕ* Geminorum.		*3 Ursæ Majoris (H.)		15 Argus (*ι*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 7 37	° ′ +28 18	h m 7 46	° ′ +27 4	h m 8 0	° ′ +68 49	h m 8 2	° ′ −23 57
	s	″	s	″	s	″	s	″
(Dec. 30.5)	53.30 +.20	70.9 −0.1	4.13 +.21	48.6 −0.2	44.50 +.44	46.0 +2.0	22.79 +.18	6.5 −2.9
Jan. 9.5	53.48 .15	70.9 +0.1	4.32 .16	48.5 +0.1	44.89 .32	48.2 2.3	22.95 .13	9.4 2.9
19.5	53.61 .10	71.2 0.3	4.45 .10	48.7 0.2	45.15 .20	50.6 2.5	23.06 .08	12.2 2.8
29.5	53.67 +.04	71.5 0.4	4.53 +.05	49.0 0.4	45.29 +.07	53.1 2.5	23.11 +.03	14.9 2.6
Feb. 8.4	53.68 −.02	72.0 0.5	4.55 −.01	49.4 0.5	45.29 −.06	55.6 2.5	23.11 −.02	17.4 2.3
18.4	53.64 .07	72.6 0.6	4.52 .06	49.9 0.5	45.17 .18	58.1 2.4	23.06 .07	19.5 2.0
28.4	53.55 .11	73.2 0.6	4.44 .10	50.5 0.6	44.93 .29	60.3 2.1	22.97 .11	21.4 1.7
Mar. 10.3	53.42 .15	73.8 0.5	4.32 .14	51.0 0.5	44.59 .38	62.3 1.8	22.84 .14	22.9 1.3
20.3	53.26 .17	74.3 0.5	4.17 .16	51.6 0.5	44.18 .44	63.9 1.4	22.68 .17	24.1 1.0
30.3	53.09 .18	74.7 0.4	4.00 .17	52.0 0.4	43.72 .48	65.0 0.9	22.51 .18	24.8 0.6
Apr. 9.3	52.91 .18	75.0 0.2	3.82 .17	52.3 0.3	43.23 .50	65.7 +0.4	22.32 .18	25.3 −0.2
19.2	52.74 .17	75.2 +0.1	3.65 .16	52.6 +0.1	42.73 .49	65.9 0.0	22.14 .18	25.3 +0.1
29.2	52.58 .15	75.2 0.0	3.49 .15	52.6 0.0	42.24 .46	65.6 −0.5	21.96 .17	25.0 0.5
May 9.2	52.44 .12	75.1 −0.1	3.36 .12	52.6 −0.1	41.80 .41	64.8 1.0	21.81 .15	24.4 0.8
19.2	52.34 .09	74.9 0.3	3.25 .09	52.5 0.2	41.42 .35	63.6 1.4	21.67 .12	23.4 1.1
29.1	52.27 .05	74.6 0.4	3.18 .05	52.3 0.3	41.11 .27	62.0 1.8	21.56 .09	22.2 1.4
June 8.1	52.24 −.01	74.2 0.4	3.15 −.02	51.9 0.4	40.88 .19	60.0 2.1	21.48 .06	20.7 1.6
18.1	52.24 +.03	73.7 0.5	3.15 +.02	51.5 0.4	40.74 −.09	57.8 2.4	21.44 −.03	18.9 1.8
28.0	52.29 .07	73.2 0.6	3.19 .06	51.1 0.5	40.69 .00	55.3 2.6	21.43 +.01	17.0 2.0
July 8.0	52.38 .11	72.6 0.6	3.27 .10	50.6 0.5	40.74 +.10	52.6 2.7	21.45 .04	14.9 2.1
18.0	52.50 .14	72.0 0.6	3.39 .13	50.0 0.6	40.88 .19	49.8 2.8	21.51 .07	12.8 2.1
28.0	52.66 .17	71.4 0.7	3.53 .16	49.4 0.6	41.12 .28	47.0 2.8	21.60 .11	10.7 2.1
Aug. 6.9	52.85 .20	70.7 0.7	3.72 .20	48.7 0.7	41.44 .37	44.3 2.8	21.73 .14	8.7 2.0
16.9	53.07 .23	69.9 0.8	3.93 .22	48.0 0.7	41.85 .45	41.5 2.7	21.88 .17	6.8 1.8
26.9	53.32 .26	69.1 0.8	4.17 .25	47.2 0.8	42.33 .52	39.0 2.5	22.07 .20	5.2 1.5
Sept. 5.9	53.59 .28	68.3 0.8	4.43 .27	46.4 0.9	42.89 .58	36.5 2.3	22.29 .23	3.9 1.1
15.8	53.88 .30	67.4 0.9	4.71 .30	45.5 0.9	43.50 .64	34.3 2.1	22.53 .26	2.9 0.7
25.8	54.20 .32	66.5 0.9	5.02 .31	44.6 1.0	44.17 .69	32.4 1.8	22.80 .28	2.4 +0.3
Oct. 5.8	54.52 .33	65.6 0.9	5.34 .33	43.6 1.0	44.88 .73	30.7 1.5	23.09 .30	2.3 −0.2
15.7	54.86 .35	64.6 1.0	5.68 .34	42.6 1.0	45.63 .76	29.5 1.1	23.40 .31	2.7 0.7
25.7	55.22 .35	63.7 0.9	6.03 .35	41.5 1.0	46.40 .78	28.5 0.7	23.72 .32	3.7 1.2
Nov. 4.7	55.57 .35	62.8 0.9	6.38 .35	40.5 1.0	47.17 .78	28.0 −0.3	24.04 .32	5.1 1.6
14.7	55.92 .34	62.0 0.8	6.73 .35	39.6 0.9	47.95 .76	28.0 +0.1	24.37 .32	7.0 2.1
24.6	56.26 .33	61.2 0.7	7.07 .33	38.8 0.8	48.69 .73	28.3 0.6	24.68 .30	9.2 2.4
Dec. 4.6	56.58 .31	60.6 0.5	7.39 .31	38.0 0.6	49.39 .67	29.2 1.0	24.97 .28	11.7 2.7
14.6	56.87 .27	60.2 0.3	7.69 .28	37.5 0.5	50.03 .60	30.4 1.4	25.24 .25	14.5 2.9
24.6	57.12 .23	59.9 −0.2	7.95 .24	37.1 0.3	50.58 .50	32.0 1.8	25.47 .21	17.4 3.0
34.5	57.33 +.18	59.9 0.0	8.16 +.19	36.9 −0.1	51.03 +.39	34.0 +2.1	25.65 +.16	20.4 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Hydræ.		ι Ursæ Majoris.		*σ^2 Ursæ Majoris.		κ Cancri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 40	° ′ +6 51	h m 8 50	° ′ +48 30	h m 8 59	° ′ +67 37	h m 9 1	° ′ +11 9
	s	″	s	″	s	″	s	″
(Dec. 30.6)	20.79 +.23	56.1 −1.5	53.76 +.34	61.7 +0.6	42.95 +.54	29.1 +1.4	10.12 +.26	28.4 −1.4
Jan. 9.5	21.00 .19	54.6 1.4	54.07 .28	62.5 1.0	43.44 .44	30.8 1.9	10.35 .21	27.1 1.2
19.5	21.17 .14	53.3 1.2	54.31 .21	63.7 1.3	43.83 .33	32.8 2.2	10.54 .17	26.0 1.0
29.5	21.29 .09	52.2 1.0	54.49 .14	65.1 1.5	44.10 .21	35.1 2.4	10.68 .11	25.1 0.8
Feb. 8.5	21.35 +.04	51.3 0.8	54.59 +.06	66.7 1.7	44.24 +.09	37.6 2.5	10.77 .06	24.5 0.5
18.4	21.37 −.01	50.7 0.5	54.62 −.01	68.4 1.7	44.27 −.03	40.2 2.6	10.81 +.01	24.1 0.3
28.4	21.34 .05	50.2 0.4	54.58 .07	70.2 1.7	44.18 .15	42.7 2.4	10.80 −.03	23.9 −0.1
Mar. 10.4	21.27 .09	50.0 −0.2	54.47 .13	71.8 1.6	43.98 .25	45.0 2.2	10.75 .07	23.8 0.0
20.4	21.17 .11	49.8 0.0	54.32 .18	73.4 1.5	43.68 .33	47.2 1.9	10.66 .10	23.9 +0.1
30.3	21.04 .13	49.9 +0.1	54.12 .21	74.7 1.2	43.32 .40	48.9 1.6	10.55 .12	24.1 0.2
Apr. 9.3	20.90 .14	50.0 0.2	53.90 .23	75.8 0.9	42.90 .44	50.3 1.2	10.42 .14	24.4 0.3
19.3	20.76 .14	50.3 0.3	53.66 .24	76.6 0.6	42.45 .46	51.2 0.7	10.28 .14	24.7 0.4
29.3	20.62 .14	50.6 0.3	53.43 .23	77.0 +0.3	41.98 .46	51.7 +0.2	10.14 .14	25.1 0.4
May 9.2	20.49 .12	51.0 0.4	53.20 .21	77.1 −0.1	41.54 .44	51.6 −0.3	10.01 .12	25.5 0.4
19.2	20.37 .10	51.4 0.5	53.00 .19	76.9 0.4	41.12 .40	51.1 0.8	9.89 .11	25.9 0.4
29.2	20.28 .08	51.9 0.5	52.83 .16	76.3 0.7	40.74 .35	50.0 1.2	9.79 .09	26.3 0.4
June 8.1	20.22 .05	52.4 0.5	52.69 .12	75.4 1.0	40.43 .28	48.6 1.6	9.72 .06	26.7 0.4
18.1	20.18 −.02	52.9 0.5	52.60 .07	74.2 1.3	40.18 .21	46.8 2.0	9.67 .04	27.0 0.3
28.1	20.17 .00	53.4 0.5	52.55 −.03	72.8 1.5	40.01 .13	44.6 2.3	9.65 −.01	27.3 0.3
July 8.1	20.19 +.03	53.9 0.5	52.54 +.02	71.1 1.7	39.91 −.05	42.2 2.6	9.65 +.02	27.6 0.2
18.0	20.24 .06	54.4 0.5	52.59 .07	69.3 1.9	39.90 +.03	39.5 2.8	9.68 .05	27.8 0.2
28.0	20.32 .09	54.8 0.4	52.67 .11	67.3 2.0	39.97 .11	36.6 2.9	9.75 .08	27.9 +0.1
Aug. 7.0	20.43 .12	55.2 0.3	52.81 .15	65.3 2.1	40.13 .20	33.7 3.0	9.84 .10	28.0 0.0
17.0	20.56 .15	55.4 +0.1	52.98 .20	63.1 2.2	40.36 .27	30.7 3.0	9.95 .13	27.9 −0.1
26.9	20.72 .18	55.4 0.0	53.20 .24	60.9 2.2	40.68 .35	27.7 3.0	10.10 .16	27.7 0.3
Sept. 5.9	20.91 .20	55.3 −0.2	53.46 .28	58.7 2.2	41.07 .42	24.8 2.9	10.27 .19	27.3 0.5
15.9	21.13 .23	55.0 0.4	53.75 .32	56.5 2.2	41.53 .49	21.9 2.7	10.48 .22	26.7 0.7
25.8	21.37 .25	54.5 0.7	54.09 .35	54.4 2.1	42.05 .56	19.3 2.5	10.71 .24	25.9 0.9
Oct. 5.8	21.63 .28	53.7 0.9	54.46 .38	52.4 2.0	42.64 .61	16.9 2.3	10.96 .27	24.9 1.1
15.8	21.92 .29	52.7 1.1	54.86 .41	50.5 1.8	43.28 .66	14.7 2.0	11.24 .29	23.7 1.3
25.8	22.22 .31	51.4 1.3	55.28 .44	48.8 1.6	43.96 .70	12.9 1.6	11.54 .31	22.4 1.4
Nov. 4.7	22.54 .32	50.0 1.5	55.73 .45	47.3 1.3	44.67 .73	11.5 1.2	11.86 .32	20.8 1.6
14.7	22.86 .32	48.4 1.7	56.18 .46	46.2 1.0	45.41 .74	10.5 0.8	12.19 .33	19.2 1.7
24.7	23.19 .32	46.7 1.7	56.64 .45	45.3 0.7	46.14 .73	10.0 −0.3	12.52 .33	17.4 1.7
Dec. 4.7	23.50 .31	44.9 1.8	57.09 .44	44.7 −0.3	46.86 .70	10.0 +0.2	12.85 .32	15.7 1.7
14.6	23.80 .29	43.1 1.7	57.51 .41	44.6 0.0	47.54 .65	10.4 0.7	13.16 .30	14.1 1.6
24.6	24.07 .26	41.5 1.6	57.91 .37	44.8 +0.4	48.16 .58	11.4 1.2	13.45 .27	12.5 1.5
34.6	24.31 +.21	39.9 −1.5	58.25 +.32	45.5 +0.8	48.70 +.50	12.8 +1.6	13.71 +.23	11.0 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ι* Argus.		*1 Draconis (H.)		*α* Hydræ.		**d* Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 13	° ′ −58 45	h m 9 19	° ′ +81 51	h m 9 21	° ′ −8 7	h m 9 23	° ′ +70 21
	s	″	s	″	s	″	s	″
(Dec. 30.6)	51.14 +.32	34.5 −3.5	44.86 +1.35	35.9 +1.7	37.13 +.26	47.8 −2.4	44.93 +.62	41.0 +1.3
Jan. 9.6	51.43 .25	38.2 3.8	46.09 1.11	37.9 2.2	37.37 .22	50.2 2.3	45.52 .54	42.5 1.8
19.6	51.63 .17	42.0 3.9	47.08 .84	40.3 2.6	37.56 .17	52.4 2.1	46.00 .42	44.5 2.1
29.5	51.76 +.08	45.9 3.9	47.77 .54	43.0 2.8	37.71 .12	54.4 1.9	46.36 .29	46.8 2.4
Feb. 8.5	51.80 .00	49.8 3.8	48.15 + .23	45.9 3.0	37.81 .07	56.3 1.7	46.58 .15	49.4 2.6
18.5	51.76 −.08	53.4 3.6	48.22 − .09	48.9 3.0	37.86 +.02	57.9 1.5	46.66 +.01	52.0 2.7
28.4	51.64 .15	56.9 3.3	47.98 .39	51.9 2.9	37.86 −.02	59.3 1.2	46.61 −.11	54.7 2.6
Mar. 10.4	51.46 .21	60.1 3.0	47.45 .67	54.6 2.6	37.82 .06	60.4 1.0	46.44 .23	57.3 2.5
20.4	51.22 .26	62.9 2.6	46.66 .90	57.1 2.3	37.75 .09	61.3 0.7	46.15 .34	59.6 2.2
30.4	50.94 .30	65.2 2.2	45.66 1.10	59.2 1.9	37.64 .11	61.9 0.5	45.77 .42	61.6 1.9
Apr. 9.3	50.62 .33	67.2 1.7	44.48 1.24	60.8 1.4	37.52 .13	62.3 −0.2	45.31 .48	63.3 1.4
19.3	50.27 .35	68.6 1.2	43.19 1.33	61.9 0.8	37.39 .13	62.4 0.0	44.81 .51	64.5 1.0
29.3	49.92 .36	69.5 0.7	41.83 1.37	62.5 +0.3	37.25 .13	62.3 +0.2	44.29 .53	65.2 +0.5
May 9.3	49.56 .35	70.0 −0.2	40.47 1.35	62.5 −0.3	37.12 .13	62.1 0.4	43.77 .52	65.4 0.0
19.2	49.22 .34	69.9 +0.3	39.15 1.28	61.9 0.9	37.00 .12	61.6 0.5	43.26 .49	65.1 −0.5
29.2	48.89 .32	69.3 0.8	37.92 1.17	60.8 1.4	36.89 .10	61.0 0.7	42.80 .44	64.3 1.0
June 8.2	48.59 .29	68.2 1.3	36.82 1.03	59.2 1.9	36.80 .08	60.2 0.9	42.39 .38	63.1 1.5
18.1	48.32 .25	66.6 1.8	35.87 .85	57.1 2.3	36.73 .06	59.2 1.0	42.04 .31	61.4 1.9
28.1	48.10 .20	64.7 2.1	35.12 .66	54.6 2.7	36.69 .03	58.2 1.1	41.78 .22	59.2 2.3
July 8.1	47.92 .15	62.4 2.5	34.57 .44	51.8 3.0	36.67 −.01	57.1 1.1	41.59 .14	56.8 2.6
18.1	47.80 .09	59.8 2.7	34.24 −.22	48.7 3.2	36.67 +.02	56.0 1.1	41.50 −.05	54.1 2.8
28.0	47.73 −.03	57.0 2.9	34.13 +.01	45.4 3.4	36.70 .04	54.9 1.1	41.50 +.04	51.2 3.0
Aug. 7.0	47.73 +.03	54.0 2.9	34.26 .24	42.0 3.5	36.76 .07	53.8 1.0	41.59 .14	48.1 3.1
17.0	47.79 .09	51.1 2.9	34.62 .47	38.5 3.5	36.85 .10	52.8 0.9	41.77 .23	45.0 3.2
27.0	47.92 .16	48.3 2.8	35.20 .69	35.0 3.4	36.97 .13	52.0 0.7	42.04 .32	41.8 3.2
Sept. 5.9	48.12 .23	45.6 2.5	35.99 .90	31.6 3.3	37.11 .16	51.3 0.5	42.40 .40	38.6 3.1
15.9	48.38 .29	43.3 2.2	37.00 1.10	28.3 3.2	37.29 .19	51.0 +0.2	42.85 .49	35.5 3.0
25.9	48.71 .36	41.3 1.7	38.19 1.28	25.3 2.9	37.50 .22	50.9 −0.1	43.38 .56	32.6 2.8
Oct. 5.8	49.09 .41	39.9 1.2	39.55 1.44	22.5 2.6	37.73 .25	51.2 0.4	43.98 .64	29.8 2.6
15.8	49.52 .45	39.0 +0.6	41.07 1.58	20.1 2.2	38.00 .28	51.8 0.8	44.65 .70	27.4 2.3
25.8	49.99 .49	38.7 0.0	42.71 1.69	18.1 1.8	38.28 .30	52.7 1.1	45.37 .75	25.3 1.9
Nov. 4.8	50.49 .50	39.1 −0.7	44.44 1.77	16.6 1.3	38.59 .31	54.1 1.5	46.14 .79	23.5 1.5
14.7	51.00 .51	40.1 1.3	46.23 1.80	15.5 0.8	38.91 .33	55.7 1.8	46.95 .81	22.2 1.1
24.7	51.50 .50	41.7 2.0	48.04 1.79	15.0 −0.2	39.24 .33	57.6 2.0	47.76 .81	21.4 −0.6
Dec. 4.7	51.99 .47	44.0 2.5	49.80 1.73	15.1 +0.4	39.56 .32	59.8 2.2	48.57 .79	21.1 0.0
14.7	52.44 .42	46.7 3.0	51.49 1.62	15.7 0.9	39.88 .30	62.0 2.3	49.34 .75	21.3 +0.5
24.6	52.83 .37	49.9 3.4	53.04 1.46	16.9 1.4	40.17 .28	64.4 2.4	50.07 .69	22.1 1.0
34.6	53.16 +.29	53.5 −3.6	54.40 +1.26	18.6 +2.0	40.43 +.24	66.8 −2.3	50.71 +.60	23.4 +1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*θ* Ursæ Majoris.		*ε* Leonis.		*μ* Leonis.		*α* Leonis. (*Regulus.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	9h 24m	+52° 13′	9h 38m	+24° 19′	9h 45m	+26° 34′	10h 1m	+12° 33′
	s	″	s	″	s	″	s	″
(Dec. 30.6)	44.19 +.39	45.3 +0.5	57.39 +.30	60.5 −1.0	51.24 +.31	43.4 −0.9	54.07 +.29	42.2 −1.6
Jan. 9.6	44.56 .34	46.0 0.9	57.67 .26	59.7 0.6	51.53 .27	42.7 0.5	54.35 .26	40.7 1.4
19.6	44.86 .27	47.2 1.3	57.91 .22	59.2 −0.3	51.78 .23	42.3 −0.2	54.60 .22	39.5 1.1
29.5	45.10 .19	48.6 1.6	58.10 .16	59.0 0.0	51.98 .17	42.2 +0.1	54.80 .17	38.5 0.8
Feb. 8.5	45.25 .11	50.3 1.8	58.24 .11	59.1 0.0	52.13 .12	42.4 0.3	54.95 .12	37.8 0.6
18.5	45.32 +.03	52.2 1.9	58.32 +.05	59.4 +0.4	52.22 .06	42.8 0.6	55.05 .07	37.4 0.3
28.4	45.32 −.04	54.2 2.0	58.35 .00	60.0 0.6	52.26 +.01	43.5 0.7	55.10 +.03	37.2 −0.1
Mar. 10.4	45.25 .10	56.2 1.9	58.33 −.04	60.6 0.7	52.24 −.04	44.3 0.9	55.10 −.01	37.2 +0.1
20.4	45.12 .16	58.0 1.8	58.27 .08	61.4 0.8	52.19 .07	45.2 0.9	55.06 .05	37.4 0.3
30.4	44.93 .21	59.7 1.6	58.17 .11	62.2 0.8	52.09 .11	46.2 0.9	55.00 .08	37.7 0.4
Apr. 9.3	44.71 .24	61.2 1.3	58.05 .13	63.1 0.8	51.98 .13	47.1 0.9	54.90 .10	38.2 0.5
19.3	44.46 .25	62.3 0.9	57.92 .14	63.8 0.7	51.84 .14	48.0 0.8	54.79 .12	38.7 0.5
29.3	44.21 .26	63.1 0.6	57.77 .14	64.5 0.6	51.69 .15	48.7 0.7	54.67 .12	39.2 0.5
May 9.3	43.95 .25	63.5 +0.2	57.63 .14	65.1 0.5	51.55 .14	49.3 0.5	54.54 .12	39.8 0.5
19.2	43.72 .23	63.5 −0.2	57.50 .13	65.5 0.4	51.41 .13	49.8 0.4	54.42 .12	40.3 0.5
29.2	43.50 .20	63.1 0.6	57.38 .11	65.8 +0.2	51.28 .12	50.0 +0.2	54.31 .10	40.8 0.4
June 8.2	43.32 .17	62.3 0.9	57.28 .09	65.9 0.0	51.18 .10	50.1 0.0	54.22 .09	41.2 0.4
18.1	43.17 .13	61.2 1.3	57.20 .07	65.9 −0.1	51.09 .07	50.1 −0.2	54.14 .07	41.5 0.3
28.1	43.06 .08	59.8 1.6	57.15 .04	65.7 0.3	51.03 .05	49.8 0.3	54.08 .05	41.8 0.2
July 8.1	43.00 −.04	58.1 1.8	57.12 −.01	65.3 0.4	51.00 −.02	49.4 0.5	54.04 −.03	42.0 +0.1
18.1	42.99 +.01	56.1 2.0	57.12 +.01	64.8 0.6	50.99 +.01	48.7 0.7	54.02 .00	42.1 0.0
28.0	43.02 .06	54.0 2.2	57.15 .04	64.2 0.7	51.01 .03	48.0 0.8	54.03 +.02	42.1 −0.1
Aug. 7.0	43.10 .10	51.7 2.4	57.21 .07	63.4 0.9	51.06 .06	47.1 1.0	54.06 .04	42.0 0.2
17.0	43.23 .15	49.2 2.5	57.29 .10	62.4 1.0	51.14 .09	46.0 1.2	54.12 .07	41.7 0.3
27.0	43.40 .20	46.7 2.6	57.41 .13	61.3 1.2	51.25 .13	44.7 1.3	54.20 .10	41.3 0.5
Sept. 5.9	43.62 .24	44.1 2.6	57.56 .16	60.1 1.3	51.39 .16	43.3 1.5	54.32 .13	40.7 0.7
15.9	43.88 .29	41.5 2.6	57.74 .19	58.7 1.5	51.57 .19	41.8 1.6	54.46 .16	39.8 0.9
25.9	44.19 .33	39.0 2.5	57.95 .23	57.2 1.6	51.78 .22	40.1 1.7	54.64 .19	38.8 1.1
Oct. 5.8	44.55 .37	36.5 2.4	58.19 .26	55.5 1.7	52.02 .26	38.3 1.8	54.85 .23	37.6 1.3
15.8	44.94 .41	34.2 2.2	58.47 .29	53.8 1.8	52.29 .29	36.5 1.9	55.09 .26	36.2 1.5
25.8	45.37 .44	32.1 2.0	58.77 .31	52.0 1.8	52.59 .31	34.6 1.9	55.36 .29	34.5 1.7
Nov. 4.8	45.82 .47	30.3 1.7	59.09 .34	50.1 1.9	52.92 .34	32.7 1.9	55.66 .31	32.8 1.8
14.7	46.30 .48	28.7 1.4	59.44 .35	48.3 1.8	53.26 .35	30.8 1.8	55.98 .33	30.9 1.9
24.7	46.79 .49	27.5 1.0	59.79 .36	46.5 1.7	53.62 .36	29.0 1.7	56.32 .34	28.9 2.0
Dec. 4.7	47.27 .48	26.7 0.6	60.15 .36	44.8 1.5	53.99 .36	27.3 1.5	56.66 .34	27.0 1.9
14.7	47.74 .46	26.3 −0.2	60.50 .34	43.4 1.3	54.35 .35	25.9 1.3	56.99 .33	25.1 1.8
24.6	48.18 .42	26.3 +0.2	60.84 .32	42.2 1.1	54.69 .33	24.7 1.1	57.32 .31	23.3 1.7
34.6	48.58 +.37	26.8 +0.7	61.14 +.28	41.2 −0.8	55.00 +.29	23.8 −0.8	57.62 +.28	21.7 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*32 Ursæ Majoris		γ^1 Leonis.		*9 Draconis (H.)		ρ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	10 9	+65 42	10 13	+20 27	10 24	+76 19	10 26	+9 55
	s	″	s	″	s	″	s	″
(Dec. 30.6)	13.11 +.60	40.8 +0.6	16.33 +.32	22.4 −1.3	46.88 +.98	67.0 +0.8	24.71 +.31	56.9 −1.7
Jan. 9.6	13.68 .53	41.7 1.1	16.63 .28	21.2 1.0	47.81 .88	68.1 1.4	25.01 .28	55.2 1.6
19.6	14.17 .44	43.1 1.6	16.90 .24	20.4 0.7	48.63 .75	69.7 1.9	25.27 .24	53.8 1.3
29.6	14.56 .35	44.9 2.0	17.12 .19	19.8 0.4	49.30 .59	71.8 2.3	25.49 .20	52.6 1.1
Feb. 8.5	14.86 .24	47.1 2.3	17.29 .14	19.5 −0.1	49.80 .41	74.3 2.6	25.66 .15	51.6 0.8
18.5	15.04 .13	49.5 2.5	17.40 .09	19.6 +0.2	50.13 .23	77.0 2.8	25.78 .10	51.0 0.5
28.5	15.11 +.02	52.1 2.6	17.47 +.04	19.8 0.4	50.26 +.04	79.9 2.9	25.86 .05	50.6 −0.3
Mar. 10.5	15.07 −.09	54.7 2.6	17.48 −.01	20.3 0.6	50.21 −.14	82.8 2.9	25.89 +.01	50.5 0.0
20.4	14.94 .18	57.2 2.4	17.46 .04	21.0 0.7	49.98 .31	85.6 2.7	25.87 −.03	50.5 +0.1
30.4	14.71 .26	59.5 2.2	17.40 .08	21.7 0.8	49.59 .46	88.2 2.4	25.83 .06	50.8 0.3
Apr. 9.4	14.42 .32	61.6 1.9	17.31 .10	22.5 0.8	49.07 .58	90.5 2.1	25.75 .08	51.1 0.4
19.3	14.07 .37	63.3 1.5	17.19 .12	23.3 0.8	48.44 .67	92.3 1.7	25.66 .10	51.6 0.5
29.3	13.68 .40	64.6 1.0	17.07 .13	24.1 0.7	47.74 .74	93.8 1.2	25.55 .11	52.1 0.5
May 9.3	13.28 .41	65.4 0.6	16.94 .13	24.8 0.6	46.98 .77	94.7 0.6	25.44 .11	52.7 0.5
19.3	12.87 .40	65.7 +0.1	16.82 .12	25.3 0.5	46.21 .78	95.1 +0.1	25.32 .11	53.2 0.5
29.2	12.48 .38	65.5 −0.4	16.70 .11	25.8 0.4	45.44 .75	94.9 −0.4	25.22 .10	53.7 0.5
June 8.2	12.12 .35	64.9 0.9	16.59 .10	26.1 0.3	44.71 .71	94.2 1.0	25.12 .09	54.2 0.5
18.2	11.79 .30	63.8 1.3	16.50 .08	26.3 +0.1	44.03 .64	92.9 1.5	25.03 .08	54.7 0.4
28.2	11.52 .25	62.2 1.8	16.43 .06	26.4 0.0	43.43 .56	91.2 1.9	24.96 .06	55.1 0.4
July 8.1	11.30 .19	60.3 2.1	16.39 .04	26.3 −0.2	42.92 .46	89.1 2.4	24.90 .04	55.4 0.3
18.1	11.14 .13	58.0 2.5	16.36 −.02	26.0 0.3	42.51 .35	86.5 2.7	24.87 −.02	55.6 +0.2
28.1	11.04 −.06	55.4 2.7	16.35 +.01	25.6 0.5	42.22 .23	83.6 3.0	24.85 .00	55.8 0.0
Aug. 7.0	11.02 +.01	52.5 2.9	16.38 .03	25.0 0.7	42.05 −.11	80.5 3.3	24.86 +.02	55.7 −0.1
17.0	11.06 .08	49.5 3.1	16.43 .06	24.2 0.8	42.00 +.01	77.1 3.4	24.90 .05	55.6 0.2
27.0	11.18 .15	46.3 3.2	16.50 .09	23.3 1.0	42.08 .15	73.6 3.6	24.96 .07	55.3 0.4
Sept. 6.0	11.37 .23	43.1 3.3	16.61 .12	22.2 1.2	42.29 .28	70.0 3.6	25.05 .10	54.8 0.6
15.9	11.63 .30	39.8 3.3	16.75 .16	20.9 1.4	42.63 .41	66.4 3.6	25.17 .14	54.1 0.8
25.9	11.97 .37	36.5 3.2	16.93 .19	19.4 1.5	43.10 .53	62.9 3.5	25.32 .17	53.2 1.0
Oct. 5.9	12.37 .44	33.4 3.0	17.13 .22	17.8 1.7	43.70 .66	59.5 3.3	25.51 .20	52.0 1.3
15.9	12.84 .50	30.5 2.8	17.38 .26	16.0 1.8	44.41 .77	56.3 3.0	25.73 .24	50.6 1.5
25.8	13.38 .56	27.8 2.5	17.65 .29	14.1 1.9	45.24 .88	53.5 2.7	25.98 .27	49.1 1.7
Nov. 4.8	13.97 .61	25.4 2.2	17.95 .31	12.2 2.0	46.16 .96	51.0 2.3	26.27 .30	47.3 1.8
14.8	14.60 .65	23.4 1.8	18.28 .34	10.1 2.0	47.16 1.03	48.9 1.9	26.58 .32	45.4 2.0
24.7	15.26 .67	21.9 1.3	18.62 .35	8.1 2.0	48.21 1.07	47.3 1.3	26.91 .33	43.4 2.0
Dec. 4.7	15.93 .68	20.8 0.8	18.98 .35	6.2 1.9	49.30 1.09	46.2 0.8	27.24 .34	41.3 2.1
14.7	16.60 .66	20.3 −0.3	19.33 .35	4.4 1.7	50.39 1.07	45.8 −0.2	27.58 .34	39.3 2.1
24.7	17.25 .62	20.3 +0.3	19.67 .33	2.8 1.5	51.44 1.02	45.9 +0.4	27.92 .32	37.3 1.9
34.6	17.85 +.57	20.8 +0.8	19.98 +.30	1.5 −1.2	52.42 +.95	46.6 +1.0	28.23 +.30	35.5 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 10 40	° ′ −59 2	h m 10 42	° ′ +11 10	h m 10 56	° ′ +62 23	h m 11 7	° ′ +21 10
	s	″	s	″	s	″	s	″
(Dec. 30.7)	20.86 +.46	19.7 −2.9	52.00 +.32	79.8 −1.8	13.97 +.58	73.5 −0.1	38.54 +.34	81.0 −1.6
Jan. 9.6	21.30 .40	22.8 3.3	52.30 .29	78.1 1.6	14.52 .53	73.7 +0.5	38.87 .32	79.6 1.3
19.6	21.67 .34	26.2 3.6	52.58 .25	76.7 1.3	15.03 .47	74.5 1.0	39.18 .28	78.5 0.9
29.6	21.97 .26	29.9 3.7	52.81 .21	75.5 1.0	15.46 .39	75.8 1.5	39.44 .24	77.7 0.6
Feb. 8.6	22.19 .18	33.6 3.8	53.00 .16	74.6 0.7	15.81 .31	77.5 1.9	39.66 .20	77.3 −0.2
18.5	22.34 .11	37.4 3.8	53.14 .11	74.0 0.4	16.07 .21	79.6 2.3	39.83 .15	77.2 +0.1
28.5	22.41 +.03	41.2 3.7	53.23 .07	73.7 −0.2	16.23 .11	82.0 2.5	39.95 .10	77.5 0.4
Mar. 10.5	22.40 −.04	44.8 3.5	53.27 +.02	73.6 0.0	16.30 +.02	84.6 2.6	40.03 .05	78.0 0.6
20.5	22.33 .10	48.2 3.2	53.28 −.01	73.7 +0.2	16.27 −.07	87.1 2.6	40.05 +.01	78.7 0.8
30.4	22.20 .16	51.3 2.9	53.25 .05	74.1 0.4	16.16 .15	89.7 2.5	40.04 −.03	79.6 0.9
Apr. 9.4	22.01 .21	54.0 2.6	53.19 .07	74.5 0.5	15.98 .22	92.0 2.3	40.00 .06	80.6 1.0
19.4	21.78 .25	56.4 2.1	53.10 .09	75.0 0.6	15.73 .27	94.2 2.0	39.93 .08	81.6 1.0
29.3	21.52 .27	58.3 1.7	53.00 .10	75.7 0.6	15.44 .31	95.9 1.6	39.83 .10	82.7 1.0
May 9.3	21.24 .29	59.8 1.2	52.90 .11	76.3 0.6	15.12 .33	97.3 1.1	39.72 .11	83.6 0.9
19.3	20.94 .31	60.8 0.7	52.78 .11	76.9 0.6	14.78 .34	98.2 0.7	39.61 .11	84.5 0.8
29.3	20.63 .31	61.3 −0.2	52.68 .10	77.5 0.5	14.43 .34	98.7 +0.2	39.50 .11	85.2 0.6
June 8.2	20.32 .30	61.2 +0.3	52.58 .10	78.0 0.5	14.10 .33	98.7 −0.3	39.38 .11	85.7 0.5
18.2	20.02 .29	60.7 0.7	52.48 .09	78.4 0.4	13.78 .30	98.1 0.7	39.28 .10	86.1 0.3
28.2	19.74 .27	59.7 1.2	52.40 .07	78.8 0.3	13.50 .27	97.2 1.2	39.18 .09	86.4 +0.1
July 8.2	19.48 .24	58.3 1.6	52.34 .05	79.1 0.2	13.24 .23	95.8 1.6	39.10 .08	86.4 −0.1
18.1	19.26 .20	56.5 2.0	52.30 .04	79.3 +0.1	13.02 .19	93.9 2.0	39.03 .06	86.2 0.3
28.1	19.08 .16	54.3 2.3	52.27 −.02	79.3 0.0	12.86 .14	91.7 2.4	38.98 .04	85.8 0.5
Aug. 7.1	18.94 .11	51.8 2.6	52.26 .00	79.3 −0.1	12.74 .09	89.2 2.7	38.95 −.02	85.2 0.7
17.0	18.86 −.05	49.2 2.7	52.28 +.03	79.0 0.3	12.69 −.03	86.4 2.9	38.94 +.01	84.5 0.9
27.0	18.84 +.02	46.4 2.8	52.32 .06	78.6 0.5	12.69 +.03	83.3 3.1	38.96 .03	83.5 1.1
Sept. 6.0	18.90 .09	43.6 2.7	52.40 .09	78.0 0.7	12.75 .10	80.1 3.3	39.01 .06	82.3 1.3
16.0	19.02 .16	41.0 2.6	52.50 .12	77.2 0.9	12.88 .16	76.8 3.4	39.09 .10	80.9 1.5
25.9	19.22 .23	38.5 2.3	52.64 .15	76.2 1.1	13.08 .23	73.4 3.4	39.21 .13	79.2 1.7
Oct. 5.9	19.49 .31	36.4 1.9	52.81 .19	75.0 1.3	13.34 .30	70.0 3.3	39.36 .17	77.4 1.9
15.9	19.83 .37	34.7 1.5	53.02 .23	73.5 1.6	13.68 .37	66.7 3.2	39.55 .21	75.4 2.1
25.9	20.23 .43	33.5 0.9	53.26 .26	71.8 1.7	14.08 .43	63.6 3.0	39.79 .25	73.3 2.2
Nov. 4.8	20.69 .48	32.9 +0.3	53.54 .29	70.0 1.9	14.54 .49	60.7 2.7	40.05 .28	71.1 2.3
14.8	21.19 .52	32.9 −0.3	53.84 .31	68.0 2.0	15.05 .54	58.1 2.4	40.35 .31	68.8 2.3
24.8	21.72 .53	33.5 0.9	54.17 .33	65.9 2.1	15.61 .57	55.9 2.0	40.68 .34	66.5 2.3
Dec. 4.7	22.26 .54	34.7 1.5	54.51 .34	63.8 2.1	16.20 .60	54.1 1.5	41.02 .35	64.3 2.2
14.7	22.79 .52	36.6 2.1	54.85 .34	61.8 2.0	16.80 .60	52.8 1.0	41.38 .36	62.2 2.0
24.7	23.29 .49	39.0 2.6	55.18 .33	59.8 1.9	17.40 .59	52.1 −0.4	41.73 .35	60.3 1.7
34.7	23.76 +.44	41.8 −3.0	55.50 +.31	58.0 −1.7	17.98 +.56	52.0 +0.1	42.08 +.33	58.7 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		*λ Draconis.		υ Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 11 13	° ′ −14 6	h m 11 21	° ′ +3 31	h m 11 24	° ′ +69 59	h m 11 30	° ′ −0 9
	s	″	s	″	s	″	s	″
(Dec. 30.7)	15.54 +.33	65.3 −2.4	40.91 +.33	35.7 −2.1	11.70 +.75	51.8 −0.2	43.19 +.33	4.9 −2.2
Jan. 9.7	15.86 .30	67.8 2.5	41.23 .31	33.7 2.0	12.44 .71	51.9 +0.4	43.51 .31	7.0 2.1
19.6	16.15 .27	70.2 2.4	41.52 .27	31.8 1.8	13.12 .65	52.6 1.0	43.81 .28	9.0 1.9
29.6	16.40 .23	72.6 2.3	41.78 .24	30.2 1.5	13.72 .56	53.9 1.6	44.07 .24	10.8 1.7
Feb. 8.6	16.60 .19	74.9 2.2	42.00 .19	28.8 1.3	14.23 .45	55.7 2.0	44.29 .20	12.4 1.5
18.5	16.77 .14	77.0 2.0	42.17 .15	27.6 1.0	14.62 .33	58.0 2.4	44.47 .16	13.8 1.2
28.5	16.88 .09	78.8 1.7	42.30 .11	26.8 0.7	14.89 .20	60.5 2.7	44.61 .11	14.8 0.9
Mar. 10.5	16.96 .05	80.5 1.5	42.38 .06	26.2 0.4	15.03 +.08	63.3 2.8	44.70 .07	15.6 0.7
20.5	16.99 +.01	81.8 1.3	42.43 +.03	25.9 −0.2	15.04 −.04	66.1 2.8	44.76 +.03	16.2 0.4
30.4	16.99 −.02	83.0 1.0	42.43 −.01	25.8 0.0	14.94 .16	68.9 2.8	44.77 .00	16.5 −0.2
Apr. 9.4	16.95 .05	83.8 0.7	42.41 .04	25.9 +0.2	14.73 .26	71.6 2.6	44.76 −.03	16.6 0.0
19.4	16.89 .07	84.5 0.5	42.36 .06	26.2 0.3	14.43 .34	74.0 2.3	44.71 .05	16.5 +0.1
29.4	16.81 .09	84.8 0.3	42.29 .08	26.5 0.4	14.05 .41	76.1 1.9	44.65 .07	16.3 0.3
May 9.3	16.72 .10	85.0 −0.1	42.20 .09	27.0 0.5	13.61 .46	77.8 1.4	44.57 .08	16.0 0.4
19.3	16.62 .10	85.0 +0.1	42.11 .09	27.5 0.6	13.13 .49	79.0 0.9	44.49 .09	15.5 0.5
29.3	16.52 .10	84.7 0.3	42.02 .10	28.1 0.6	12.64 .50	79.7 +0.4	44.39 .09	15.0 0.5
June 8.2	16.41 .10	84.3 0.5	41.92 .10	28.7 0.6	12.13 .50	79.8 −0.1	44.30 .09	14.5 0.6
18.2	16.31 .10	83.7 0.7	41.82 .09	29.3 0.6	11.64 .48	79.5 0.6	44.21 .09	13.9 0.6
28.2	16.22 .09	82.9 0.8	41.74 .08	29.8 0.5	11.17 .45	78.6 1.1	44.12 .09	13.3 0.6
July 8.2	16.13 .08	82.0 0.9	41.66 .07	30.4 0.5	10.75 .41	77.3 1.6	44.03 .08	12.7 0.6
18.1	16.06 .06	81.1 1.0	41.59 .06	30.8 0.4	10.36 .35	75.5 2.0	43.96 .07	12.1 0.5
28.1	16.00 .05	80.0 1.1	41.53 .05	31.2 0.3	10.04 .29	73.2 2.4	43.90 .05	11.6 0.5
Aug. 7.1	15.96 .03	78.9 1.1	41.49 .03	31.5 0.2	9.78 .22	70.6 2.8	43.85 .04	11.1 0.4
17.1	15.94 −.01	77.9 1.0	41.48 −.01	31.7 +0.1	9.59 .15	67.6 3.1	43.83 −.02	10.8 0.3
27.0	15.95 +.02	76.9 0.9	41.48 +.02	31.7 −0.1	9.48 −.07	64.4 3.3	43.82 +.01	10.6 +0.1
Sept. 6.0	15.99 .05	76.0 0.8	41.52 .05	31.5 0.3	9.46 +.02	61.0 3.5	43.85 .04	10.5 0.0
16.0	16.06 .09	75.3 0.6	41.58 .08	31.2 0.5	9.52 .11	57.4 3.6	43.90 .07	10.6 −0.3
25.9	16.16 .12	74.9 +0.3	41.67 .11	30.6 0.7	9.68 .20	53.8 3.7	43.99 .11	11.0 0.5
Oct. 5.9	16.31 .16	74.7 0.0	41.81 .15	29.7 1.0	9.93 .30	50.1 3.6	44.11 .14	11.6 0.8
15.9	16.49 .20	74.8 −0.3	41.98 .19	28.6 1.2	10.27 .39	46.5 3.5	44.28 .18	12.5 1.0
25.9	16.71 .24	75.3 0.7	42.19 .23	27.3 1.5	10.71 .48	43.1 3.3	44.48 .22	13.7 1.3
Nov. 4.8	16.98 .28	76.2 1.0	42.44 .26	25.7 1.7	11.24 .57	39.9 3.0	44.72 .26	15.2 1.6
14.8	17.27 .31	77.4 1.4	42.72 .29	23.8 1.9	11.84 .64	37.0 2.7	45.00 .29	16.8 1.8
24.8	17.59 .33	79.0 1.7	43.03 .32	21.8 2.1	12.52 .70	34.6 2.2	45.30 .32	18.8 2.0
Dec. 4.8	17.93 .34	80.9 2.0	43.36 .34	19.7 2.2	13.24 .75	32.6 1.7	45.63 .33	20.8 2.1
14.7	18.27 .34	83.0 2.2	43.70 .34	17.5 2.2	14.00 .77	31.1 1.2	45.97 .34	23.0 2.2
24.7	18.61 .34	85.3 2.4	44.03 .34	15.3 2.2	14.77 .76	30.2 −0.6	46.30 .34	25.2 2.2
34.7	18.94 +.32	87.7 −2.4	44.36 +.32	13.2 −2.0	15.52 +.73	30.0 0.0	46.64 +.32	27.4 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β* Leonis.		*γ* Ursæ Majoris.		*o* Virginis.		*4 Draconis (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 11 42	° ′ +15 14	h m 11 47	° ′ +54 21	h m 11 59	° ′ +9 24	h m 12 6	° ′ +78 16
	s	″	s	″	s	″	s	″
(Dec. 30.7)	51.25 +.34	65.5 −1.9	26.20 +.50	62.2 −1.0	0.62 +.34	30.4 −2.1	31.78 +1.20	73.2 −0.6
Jan. 9.7	51.59 .32	63.7 1.7	26.69 .47	61.5 −0.4	0.95 .32	28.4 1.9	32.97 1.17	72.9 +0.1
19.6	51.90 .30	62.2 1.3	27.15 .44	61.5 +0.2	1.27 .30	26.7 1.6	34.11 1.10	73.4 0.8
29.6	52.18 .26	61.0 1.0	27.56 .39	61.9 0.7	1.55 .27	25.2 1.3	35.16 .99	74.4 1.4
Feb. 8.6	52.42 .22	60.1 0.7	27.92 .33	63.0 1.2	1.80 .23	24.0 1.0	36.08 .84	76.1 1.9
18.6	52.62 .17	59.6 −0.3	28.21 .26	64.4 1.7	2.01 .19	23.2 0.7	36.84 .67	78.2 2.3
28.5	52.77 .13	59.5 0.0	28.43 .18	66.3 2.0	2.18 .14	22.6 0.4	37.41 .48	80.7 2.7
Mar. 10.5	52.88 .09	59.6 +0.3	28.58 .11	68.5 2.3	2.30 .10	22.4 −0.1	37.79 .27	83.6 2.9
20.5	52.94 .04	60.0 0.5	28 65 +.04	70.9 2.4	2.38 .06	22.5 +0.2	37.96+ .07	86.6 3.0
30.4	52.96 +.01	60.6 0.7	28.65 −.03	73.4 2.5	2.42 +.02	22.7 0.4	37.93− .13	89.6 3.0
Apr. 9.4	52.95 −.03	61.4 0.8	28.59 .09	75.8 2.4	2.43 −.01	23.2 0.5	37.70 .32	92.6 2.9
19.4	52.91 .05	62.2 0.9	28.48 .14	78.2 2.2	2.41 .03	23.8 0.7	37.29 .49	95.3 2.6
29.4	52.85 .07	63.1 0.9	28.32 .18	80.3 2.0	2.37 .05	24.5 0.7	36.73 .63	97.8 2.3
May 9.3	52.77 .09	64.1 0.9	28.12 .21	82.2 1.7	2.30 .07	25.3 0.8	36.03 .75	99.9 1.9
19.3	52.68 .10	65.0 0.9	27.89 .23	83.7 1.3	2.23 .08	26.0 0.8	35.23 .84	101.5 1.4
29.3	52.56 .10	65.8 0.8	27.65 .24	84.8 0.9	2.14 .09	26.8 0.7	34.36 .90	102.6 0.9
June 8.3	52.48 .10	66.5 0.6	27.41 .25	85.5 +0.5	2.05 .10	27.5 0.7	33.44 .93	103.2 +0.3
18.2	52.38 .10	67.1 0.5	27.16 .24	85.7 0.0	1.95 .10	28.2 0.6	32.51 .93	103.2 −0.2
28.2	52.28 .10	67.5 0.4	26.92 .23	85.5 −0.4	1.85 .09	28.7 0.5	31.58 .91	102.7 0.8
July 8.2	52.18 .09	67.8 +0.2	26.69 .22	84.8 0.9	1.76 .09	29.2 0.4	30.68 .87	101.7 1.3
18.1	52.10 .08	68.0 0.0	26.49 .19	83.7 1.3	1.67 .08	29.5 0.3	29.84 .81	100.1 1.8
28.1	52.03 .06	67.9 −0.1	26.31 .17	82.2 1.7	1.59 .07	29.7 +0.1	29.08 .72	98.0 2.3
Aug. 7.1	51.97 .05	67.7 0.3	26.16 .13	80.3 2.1	1.53 .06	29.8 0.0	28.40 .62	95.5 2.7
17.1	51.93 −.03	67.2 0.5	26.04 .10	78.1 2.4	1.48 .04	29.7 −0.2	27.83 .51	92.7 3.1
27.0	51.92 .00	66.6 0.7	25.97 .05	75.5 2.7	1.45 −.02	29.4 0.4	27.39 .38	89.4 3.3
Sept. 6.0	51.93 +.02	65.8 1.0	25.94 −.01	72.7 3.0	1.45 +.01	28.9 0.6	27.07 .24	86.0 3.6
16.0	51.97 .06	64.7 1.2	25.95 +.04	69.6 3.1	1.47 .04	28.1 0.8	26.90− .09	82.3 3.8
26.0	52.04 .09	63.4 1.4	26.03 .10	66.4 3.3	1.53 .08	27.2 1.1	26.89+ .06	78.5 3.8
Oct. 5.9	52.15 .13	61.9 1.6	26.16 .16	63.1 3.4	1.62 .11	26.0 1.3	27.03 .23	74.6 3.9
15.9	52.31 .17	60.1 1.8	26.35 .22	59.7 3.4	1.76 .16	24.6 1.5	27.34 .39	70.8 3.8
25.9	52.50 .21	58.2 2.0	26.60 .28	56.3 3.3	1.94 .20	22.9 1.8	27.81 .55	67.1 3.6
Nov. 4.8	52.73 .25	56.1 2.2	26.92 .34	53.1 3.2	2.15 .24	21.0 2.0	28.45 .71	63.5 3.4
14.8	53.00 .28	53.8 2.3	27.28 .39	50.0 2.9	2.41 .27	19.0 2.1	29.23 .86	60.3 3.0
24.8	53.30 .31	51.5 2.3	27.70 .44	47.2 2.6	2.70 .30	16.8 2.2	30.15 .98	57.5 2.6
Dec. 4.8	53.68 .34	49.2 2.3	28.16 .47	44.7 2.2	3.02 .33	14.5 2.3	31.19 1.08	55.1 2.1
14.7	53.97 .35	47.0 2.2	28.64 .49	42.7 1.8	3.35 .34	12.3 2.2	32.31 1.15	53.2 1.6
24.7	54.32 .34	44.8 2.0	29.14 .50	41.2 1.3	3.69 .34	10.1 2.1	33.49 1.19	52.0 1.0
34.7	54.66 +.33	42.9 −1.8	29.63 +.49	40.1 −0.7	4.03 +.33	8.0 −2.0	34.68 +1.18	51.3 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Chamæleontis.		η Virginis.		α¹ Crucis.		β Corvi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 11	° ′ −78 37	h m 12 13	° ′ +0 0	h m 12 19	° ′ −62 25	h m 12 27	° ′ −22 43
	s	″	s	″	s	″	s	″
(Dec. 30.7)	11.84 +1.25	51.1 −1.5	40.65 +.34	35.6 −2.2	48.83 +.61	4.9 −1.8	59.35 +.36	15.2 −2.2
Jan. 9.7	13.05 1.18	52.9 2.1	40.98 .33	33.5 2.1	49.42 .57	6.9 2.2	59.71 .35	17.5 2.3
19.7	14.18 1.07	55.2 2.6	41.30 .30	31.4 1.9	49.98 .53	9.3 2.7	60.05 .33	19.9 2.4
29.7	15.19 .95	58.1 3.0	41.59 .27	29.6 1.7	50.48 .48	12.2 3.0	60.36 .30	22.3 2.4
Feb. 8.6	16.07 .80	61.3 3.4	41.85 .24	28.0 1.5	50.93 .41	15.3 3.3	60.64 .26	24.7 2.4
18.6	16.80 .64	64.8 3.6	42.07 .20	26.6 1.2	51.30 .34	18.7 3.5	60.88 .22	27.1 2.3
28.6	17.36 .48	68.5 3.8	42.24 .16	25.5 0.9	51.61 .26	22.3 3.6	61.08 .18	29.3 2.1
Mar. 10.5	17.75 .31	72.4 3.9	42.38 .12	24.7 0.7	51.83 .19	25.9 3.6	61.24 .14	31.3 2.0
20.5	17.97 + .14	76.2 3.9	42.48 .08	24.2 0.4	51.99 .12	29.4 3.5	61.35 .10	33.2 1.8
30.5	18.03 − .03	80.1 3.8	42.54 .04	23.9 −0.2	52.07 +.04	32.9 3.4	61.43 .06	34.8 1.5
Apr. 9.5	17.92 .18	83.8 3.6	42.56 +.01	23.9 0.0	52.08 −.02	36.2 3.2	61.47 +.03	36.3 1.3
19.4	17.66 .33	87.3 3.4	42.56 −.02	24.0 +0.2	52.03 .06	39.3 2.9	61.49 .00	37.5 1.1
29.4	17.26 .47	90.5 3.1	42.53 .04	24.3 0.3	51.92 .13	42.1 2.6	61.47 −.03	38.4 0.8
May 9.4	16.74 .59	93.4 2.7	42.48 .05	24.6 0.4	51.76 .18	44.5 2.3	61.43 .05	39.1 0.6
19.4	16.09 .69	95.9 2.3	42.42 .07	25.1 0.5	51.55 .23	46.6 1.9	61.37 .07	39.6 0.4
29.3	15.35 .78	98.0 1.8	42.34 .08	25.7 0.6	51.31 .26	48.2 1.4	61.30 .08	39.9 −0.1
June 8.3	14.53 .85	99.5 1.3	42.26 .09	26.2 0.6	51.03 .29	49.4 1.0	61.21 .09	39.9 +0.1
18.3	13.65 .90	100.6 0.8	42.17 .09	26.8 0.6	50.73 .31	50.2 −0.5	61.11 .10	39.7 0.3
28.2	12.74 .92	101.1 −0.2	42.08 .09	27.4 0.6	50.41 .33	50.4 0.0	61.01 .11	39.3 0.5
July 8.2	11.82 .92	101.0 +0.3	42.98 .09	28.0 0.6	50.08 .33	50.2 +0.5	60.90 .11	38.7 0.7
18.2	10.92 .88	100.4 0.9	41.89 .09	28.6 0.5	49.75 .32	49.4 1.0	60.78 .11	37.9 0.9
28.2	10.06 .82	99.3 1.4	41.81 .08	29.1 0.5	49.44 .30	48.2 1.4	60.68 .10	36.9 1.0
Aug. 7.1	9.29 .73	97.7 1.9	41.74 .07	29.5 0.4	49.16 .27	46.6 1.8	60.58 .09	35.9 1.1
17.1	8.61 .61	95.6 2.3	41.68 .05	29.8 0.2	48.91 .22	44.6 2.2	60.50 .07	34.7 1.2
27.1	8.08 .46	93.1 2.6	41.64 −.03	30.0 +0.1	48.72 .17	42.3 2.4	60.44 .05	33.5 1.2
Sept. 6.1	7.70 .29	90.4 2.8	41.62 .00	30.0 −0.1	48.58 .10	39.8 2.6	60.40 −.03	32.4 1.1
16.0	7.51 − .10	87.5 3.0	41.63 +.03	29.8 0.3	48.52 −.02	37.1 2.7	60.39 +.01	31.3 1.0
26.0	7.51 + .10	84.5 3.0	41.67 .06	29.5 0.5	48.54 +.06	34.5 2.6	60.42 .05	30.3 0.9
Oct. 6.0	7.72 .31	81.5 2.9	41.76 .10	28.9 0.7	48.65 .15	31.9 2.5	60.49 .10	29.6 0.6
15.9	8.14 .52	78.7 2.7	41.88 .14	28.0 1.0	48.85 .24	29.5 2.3	60.61 .14	29.1 +0.3
25.9	8.76 .72	76.2 2.3	42.04 .19	26.8 1.3	49.14 .33	27.4 1.9	60.78 .10	28.9 0.0
Nov. 4.9	9.57 .89	74.1 1.9	42.25 .23	25.4 1.5	49.52 .42	25.7 1.5	60.99 .24	29.1 −0.3
14.9	10.54 1.04	72.5 1.4	42.50 .27	23.8 1.8	49.97 .49	24.5 1.0	61.25 .28	29.6 0.7
24.8	11.65 1.16	71.4 0.8	42.78 .30	21.9 2.0	50.49 .54	23.8 +0.4	61.54 .31	30.5 1.1
Dec. 4.8	12.85 1.24	70.9 +0.2	43.09 .32	19.8 2.1	51.05 .59	23.7 −0.2	61.87 .34	31.7 1.4
14.8	14.11 1.28	71.0 −0.5	43.42 .34	17.7 2.2	51.65 .61	24.2 0.8	62.22 .36	33.3 1.7
24.8	15.39 1.27	71.8 1.1	43.76 .34	15.5 2.2	52.26 .61	25.3 1.4	62.58 .36	35.2 2.0
34.7	16.64 +1.22	73.3 −1.7	44.10 +.34	13.3 −2.1	52.87 +.59	26.9 −1.9	63.94 +.36	37.4 −2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*κ Draconis.		*32 Camelop. (foll.)		12 Can. Venaticorum.		θ Virginis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 12 28	° ′ +70 26	h m 12 48	° ′ +84 3	h m 12 50	° ′ +38 57	h m 13 3	° ′ −4 53
	s	″	s	″	s	″	s	″
(Dec. 30.7)	18.06 +.77	73.1 −1.0	18.67 +2.19	66.3 −1.0	19.97 +.40	80.5 −1.9	38.52 +.34	18.7 −2.1
Jan. 9.7	18.83 .76	72.4 −0.4	20.87 2.20	65.6 −0.3	20.37 .39	78.8 1.5	38.86 .34	20.8 2.1
19.7	19.58 .72	72.3 +0.2	23.06 2.15	65.6 +0.3	20.76 .38	77.5 0.9	39.19 .33	22.9 2.0
29.7	20.27 .66	72.9 0.9	25.14 2.01	66.3 1.0	21.12 .35	76.9 −0.4	39.51 .30	24.8 1.9
Feb. 8.6	20.90 .58	74.0 1.5	27.05 1.80	67.6 1.6	21.46 .32	76.7 +0.1	39.80 .27	26.6 1.7
18.6	21.44 .48	75.8 2.0	28.72 1.52	69.4 2.1	21.75 .27	77.1 0.6	40.06 .24	28.2 1.4
28.6	21.86 .37	78.0 2.4	30.08 1.19	71.8 2.5	22.00 .22	78.0 1.1	40.28 .20	29.5 1.2
Mar. 10.6	22.18 .25	80.5 2.7	31.10 .82	74.5 2.8	22.20 .17	79.2 1.5	40.46 .16	30.5 0.9
20.5	22.36 +.12	83.3 2.9	31.72 .43	77.4 3.0	22.34 .12	80.9 1.8	40.61 .13	31.3 0.7
30.5	22.43 .00	86.3 3.0	31.96 + .03	80.5 3.1	22.44 .07	82.8 2.0	40.72 .09	31.9 0.4
Apr. 9.5	22.37 −.11	89.2 2.9	31.80 − .36	83.6 3.0	22.48 +.02	84.9 2.1	40.80 .06	32.2 −0.2
19.4	22.21 .21	92.1 2.7	31.25 .73	86.6 2.9	22.49 −.02	87.0 2.1	40.84 .03	32.3 0.0
29.4	21.95 .31	94.7 2.5	30.36 1.06	89.3 2.6	22.45 .05	89.1 2.1	40.86 +.01	32.3 +0.1
May 9.4	21.60 .38	97.0 2.1	29.15 1.35	91.7 2.2	22.38 .09	91.2 1.9	40.86 −.02	32.0 0.3
19.4	21.19 .44	99.0 1.7	27.68 1.58	93.7 1.8	22.28 .11	93.0 1.7	40.83 .04	31.7 0.4
29.3	20.72 .49	100.4 1.2	26.00 1.77	95.3 1.3	22.16 .13	94.7 1.5	40.78 .05	31.3 0.4
June 8.3	20.22 .52	101.4 0.7	24.16 1.90	96.3 0.8	22.03 .14	96.0 1.2	40.72 .07	30.8 0.5
18.3	19.69 .53	101.9 +0.2	22.22 1.98	96.8 +0.2	21.87 .16	97.0 0.9	40.64 .08	30.3 0.6
28.3	19.16 .53	101.9 −0.3	20.22 2.00	96.7 −0.4	21.71 .16	97.7 0.5	40.56 .09	29.7 0.6
July 8.2	18.64 .51	101.3 0.8	18.23 1.97	96.1 0.9	21.55 .16	98.0 +0.1	40.47 .10	29.1 0.6
18.2	18.14 .48	100.2 1.3	16.29 1.90	94.9 1.4	21.39 .16	97.9 −0.3	40.37 .10	28.5 0.6
28.2	17.68 .45	98.6 1.8	14.44 1.79	93.3 1.9	21.23 .15	97.5 0.7	40.26 .10	28.0 0.6
Aug. 7.1	17.25 .40	96.5 2.3	12.73 1.63	91.1 2.4	21.08 .14	96.6 1.0	40.16 .10	27.4 0.5
17.1	16.89 .34	94.0 2.7	11.19 1.44	88.5 2.8	20.95 .12	95.4 1.4	40.07 .09	27.0 0.4
27.1	16.58 .27	91.2 3.0	9.85 1.22	85.5 3.2	20.84 .10	93.8 1 7	39.99 .07	26.6 0.3
Sept. 6.1	16.35 .19	88.0 3.3	8.75 .97	82.2 3.4	20.75 .07	91.9 2.1	39.93 .05	26.3 +0.2
16.0	16.20 .10	84.6 3.5	7.92 .69	78.6 3.7	20.69 −.04	89.7 2.4	39.90 −.02	26.2 0.0
26.0	16.14 −.01	80.9 3.7	7.38 .39	74.9 3.8	20.68 .00	87.2 2.6	39.89 +.01	26.3 −0.2
Oct. 6.0	16.18 +.09	77.1 3.8	7.14 − .08	71.0 3.9	20.70 +.05	84.5 2.8	39.92 .05	26.5 0.4
16.0	16.33 .19	73.3 3.8	7.22 + .25	67.1 3.9	20.78 .10	81.6 3.0	40.00 .10	27.1 0.6
25.9	16.58 .30	69.6 3.7	7.64 .58	63.2 3.8	20.91 .15	78.5 3.1	40.12 .14	27.8 0.9
Nov. 4.9	16.93 .41	65.9 3.6	8.38 .91	59.5 3.6	21.09 .21	75.3 3.2	40.28 .19	28.9 1.2
14.9	17.39 .50	62.4 3.3	9.45 1.22	56.0 3.3	21.32 .26	72.2 3.1	40.49 .23	30.2 1.4
24.8	17.93 .59	59.3 3.0	10.82 1.52	52.9 3.0	21.60 .30	69.1 3.0	40.74 .27	31.8 1.7
Dec. 4.8	18.57 .67	56.5 2.5	12.47 1.77	50.1 2.5	21.93 .34	66.2 2.8	41.03 .30	33.6 1.9
14.8	19.26 .72	54.3 2.0	14.35 1.97	47.9 2.0	22.29 .37	63.5 2.5	41.34 .32	35.6 2.0
24.8	20.00 .75	52.6 1.4	16.40 2.11	46.2 1.4	22.67 .39	61.1 2.2	41.67 .34	37.6 2.1
34.7	20.76 +.76	51.5 −0.8	18.55 +2.19	45.2 −0.7	23.06 +.39	59.1 −1.7	42.02 +.34	39.7 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis. (*Spica.*)		ζ Virginis.		η Ursæ Majoris.		η Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$13^{h}\ 18^{m}$	$-10^{\circ}\ 31'$	$13^{h}\ 28^{m}$	$+0^{\circ}\ 1'$	$13^{h}\ 42^{m}$	$+49^{\circ}\ 54'$	$13^{h}\ 48^{m}$	$+19^{\circ}\ 0'$
	s	″	s	″	s	″	s	″
(Dec. 30.8)	46.37 +.35	29.2 −2.0	28.98 +.34	35.9 −2.2	44.36 +.43	59.1 −2.2	52.88 +.34	22.6 −2.4
Jan. 9.8	46.72 .34	31.3 2.1	29.31 .34	33.8 2.1	44.80 .44	57.1 1.7	53.22 .34	20.4 2.1
19.7	47.06 .33	33.4 2.0	29.65 .33	31.8 1.9	45.24 .44	55.6 1.2	53.56 .34	18.5 1.7
29.7	47.38 .31	35.4 2.0	29.97 .31	29.9 1.7	45.67 .43	54.7 −0.6	53.90 .33	16.9 1.4
Feb. 8.7	47.68 .29	37.3 1.8	30.27 .29	28.3 1.5	46.09 .40	54.5 +0.1	54.21 .30	15.7 0.9
18.7	47.95 .25	39.0 1.6	30.54 .26	27.0 1.2	46.47 .36	54.9 0.7	54.50 .28	15.0 0.5
28.6	48.19 .22	40.6 1.4	30.78 .22	25.9 0.9	46.80 .31	55.8 1.2	54.76 .24	14.7 −0.1
Mar. 10.6	48.39 .18	41.9 1.2	30.98 .19	25.1 0.6	47.09 .26	57.3 1.7	54.99 .21	14.8 +0.3
20.6	48.55 .14	43.0 1.0	31.15 .15	24.6 0.4	47.32 .20	59.2 2.1	55.18 .17	15.3 0.7
30.5	48.68 .11	43.8 0.7	31.29 .12	24.4 −0.1	47.49 .14	61.4 2.4	55.33 .13	16.1 1.0
Apr. 9.5	48.77 .08	44.5 0.5	31.39 .08	24.4 +0.1	47.60 .09	63.9 2.6	55.45 .10	17.3 1.2
19.5	48.84 .05	44.9 0.3	31.45 .05	24.6 0.3	47.66 +.03	66.6 2.7	55.53 .06	18.6 1.4
29.5	48.87 +.02	45.2 −0.2	31.49 +.03	25.0 0.5	47.67 −.02	69.2 2.7	55.58 +.03	20.0 1.5
May 9.4	48.88 .00	45.3 0.0	31.51 .00	25.5 0.6	47.62 .07	71.9 2.6	55.60 .00	21.6 1.5
19.4	48.87 −.02	45.2 +0.1	31.50 −.02	26.1 0.6	47.54 .11	74.3 2.4	55.59 −.02	23.1 1.5
29.4	48.83 .04	45.0 0.2	31.47 .04	26.8 0.7	47.41 .14	76.6 2.1	55.56 .04	24.6 1.4
June 8.3	48.78 .06	44.7 0.3	31.42 .06	27.5 0.7	47.25 .17	78.5 1.7	55.50 .07	25.9 1.3
18.3	48.71 .08	44.3 0.4	31.35 .07	28.2 0.7	47.06 .20	80.0 1.4	55.43 .08	27.2 1.1
28.3	48.63 .09	43.9 0.5	31.27 .09	28.8 0.6	46.85 .22	81.2 0.9	55.33 .10	28.2 0.9
July 8.3	48.53 .10	43.4 0.6	31.18 .10	29.5 0.6	46.62 .23	81.9 +0.5	55.23 .11	29.0 0.7
18.2	48.43 .11	42.8 0.6	31.08 .11	30.0 0.5	46.38 .24	82.1 0.0	55.11 .12	29.6 0.5
28.2	48.32 .11	42.1 0.6	30.97 .11	30.5 0.5	46.14 .24	81.9 −0.4	54.98 .13	30.0 +0.2
Aug. 7.2	48.21 .11	41.5 0.6	30.86 .11	31.0 0.4	45.90 .24	81.3 0.9	54.84 .13	30.1 0.0
17.2	48.11 .10	40.9 0.6	30.75 .10	31.3 0.3	45.67 .22	80.1 1.3	54.72 .12	29.9 −0.3
27.1	48.02 .08	40.3 0.5	30.66 .09	31.5 +0.1	45.46 .20	78.6 1.8	54.60 .11	29.4 0.6
Sept. 6.1	47.95 .06	39.8 0.5	30.58 .07	31.5 0.0	45.27 .17	76.6 2.2	54.49 .10	28.7 0.9
16.1	47.90 −.03	39.4 0.3	30.52 .04	31.4 −0.2	45.11 .14	74.2 2.5	54.40 .07	27.6 1.2
26.0	47.88 .00	39.1 +0.2	30.49 −.01	31.1 0.4	44.99 .09	71.5 2.9	54.34 −.04	26.3 1.5
Oct. 6.0	47.90 +.04	39.1 0.0	30.50 +.03	30.5 0.7	44.92 −.04	68.5 3.1	54.32 .00	24.7 1.7
16.0	47.96 .08	39.2 −0.3	30.54 .07	29.7 0.9	44.90 +.01	65.3 3.4	54.34 +.04	22.9 2.0
26.0	48.07 .13	39.6 0.5	30.64 .11	28.7 1.2	44.95 .08	61.8 3.5	54.40 .09	20.7 2.2
Nov. 4.9	48.22 .18	40.3 0.8	30.77 .16	27.4 1.4	45.06 .14	58.3 3.6	54.51 .13	18.4 2.4
14.9	48.42 .22	41.3 1.1	30.96 .20	25.9 1.7	45.23 .21	54.7 3.6	54.66 .18	15.9 2.6
24.9	48.67 .26	42.6 1.4	31.18 .25	24.1 1.8	45.47 .27	51.2 3.5	54.87 .23	13.3 2.6
Dec. 4.8	48.95 .30	44.1 1.6	31.45 .28	22.2 2.0	45.77 .33	47.8 3.2	55.12 .27	10.6 2.7
14.8	49.26 .32	45.8 1.8	31.75 .31	20.1 2.1	46.12 .37	44.7 2.9	55.40 .30	8.0 2.6
24.8	49.59 .34	47.7 2.0	32.07 .33	18.0 2.1	46.51 .41	42.0 2.6	55.72 .32	5.5 2.5
34.8	49.93 +.34	49.7 −2.0	32.40 +.33	15.9 −2.1	46.94 +.43	39.6 −2.1	56.05 +.34	3.1 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Centauri.		*α Draconis.		α Bootis. (*Arcturus.*)		θ Bootis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 13 55	° ′ −59 46	h m 14 1	° ′ +64 56	h m 14 10	° ′ +19 48	h m 14 21	° ′ +52 24
	s	″	s	″	s	″	s	″
(Dec. 30.8)	12.82 +.59	51.9 −0.5	5.28 +.56	66.7 −2.3	5.96 +.33	52.6 −2.5	2.51 +.41	32.6 −2.6
Jan. 9.8	13.41 .59	52.7 1.0	5.86 .59	64.7 1.7	6.29 .34	50.2 2.2	2.94 .44	30.2 2.1
19.8	13.99 .58	53.9 1.5	6.47 .61	63.3 1.1	6.63 .34	48.2 1.9	3.38 .45	28.4 1.5
29.7	14.56 .56	55.6 1.9	7.07 .60	62.5 −0.4	6.97 .33	46.5 1.5	3.83 .45	27.2 0.9
Feb. 8.7	15.11 .53	57.7 2.3	7.66 .57	62.5 +0.3	7.29 .31	45.2 1.1	4.27 .43	26.6 −0.3
18.7	15.61 .48	60.1 2.5	8.20 .52	63.1 0.9	7.59 .29	44.4 0.6	4.69 .40	26.6 +0.4
28.6	16.07 .43	62.8 2.8	8.70 .46	64.3 1.5	7.86 .26	44.0 −0.2	5.07 .36	27.3 1.0
Mar. 10.6	16.47 .37	65.6 2.9	9.12 .39	66.0 2.0	8.10 .22	44.1 +0.3	5.41 .31	28.5 1.5
20.6	16.81 .31	68.6 3.0	9.47 .30	68.3 2.4	8.31 .19	44.5 0.6	5.70 .26	30.3 2.0
30.6	17.10 .25	71.6 3.1	9.73 .21	70.9 2.7	8.48 .15	45.4 1.0	5.93 .20	32.5 2.4
Apr. 9.5	17.32 .19	74.7 3.0	9.90 .12	73.7 2.9	8.61 .12	46.5 1.2	6.10 .14	35.0 2.6
19.5	17.49 .13	77.7 2.9	9.98 +.04	76.8 3.0	8.71 .08	47.8 1.4	6.21 .08	37.7 2.8
29.5	17.59 .07	80.5 2.8	9.97 −.05	79.8 3.0	8.78 .05	49.3 1.6	6.27 +.03	40.5 2.8
May 9.4	17.64 +.02	83.2 2.6	9.88 .13	82.7 2.9	8.82 +.02	50.9 1.6	6.27 −.03	43.4 2.8
19.4	17.63 −.04	85.7 2.3	9.72 .20	85.5 2.6	8.83 −.01	52.5 1.6	6.22 .08	46.1 2.6
29.4	17.56 .09	87.9 2.1	9.49 .26	88.8 2.3	8.81 .03	54.1 1.5	6.12 .12	48.7 2.4
June 8.4	17.44 .14	89.8 1.7	9.20 .32	90.1 1.9	8.76 .06	55.5 1.4	5.97 .16	51.0 2.1
18.3	17.27 .19	91.3 1.3	8.86 .36	91.9 1.5	8.69 .08	56.8 1.2	5.79 .20	52.9 1.8
28.3	17.06 .23	92.5 0.9	8.48 .39	93.1 1.0	8.60 .10	58.0 1.0	5.58 .23	54.4 1.3
July 8.3	16.82 .26	93.2 0.5	8.08 .42	93.9 +0.5	8.50 .11	58.9 0.8	5.34 .25	55.6 0.9
18.3	16.55 .28	93.5 −0.1	7.65 .43	94.1 0.0	8.37 .13	59.6 0.5	5.08 .27	56.2 +0.4
28.2	16.25 .30	93.3 +0.4	7.21 .44	93.8 −0.5	8.24 .14	60.0 +0.3	4.81 .28	56.4 0.0
Aug. 7.2	15.95 .30	92.7 0.8	6.78 .43	93.0 1.0	8.10 .14	60.1 0.0	4.53 .28	56.1 −0.5
17.2	15.65 .29	91.7 1.2	6.35 .41	91.8 1.5	7.96 .14	60.0 −0.3	4.25 .28	55.4 1.0
27.1	15.37 .26	90.3 1.6	5.96 .38	90.0 2.0	7.82 .13	59.5 0.6	3.98 .26	54.1 1.5
Sept. 6.1	15.13 .22	88.5 1.9	5.59 .34	87.8 2.4	7.70 .12	58.8 0.9	3.72 .24	52.4 1.9
16.1	14.93 .17	86.4 2.2	5.28 .29	85.1 2.8	7.59 .10	57.8 1.2	3.50 .21	50.3 2.3
26.1	14.79 .10	84.1 2.4	5.02 .23	82.1 3.2	7.51 .07	56.5 1.5	3.31 .17	47.8 2.7
Oct. 6.0	14.72 −.03	81.7 2.4	4.82 .15	78.8 3.5	7.46 −.03	54.9 1.8	3.17 .12	44.9 3.0
16.0	14.74 +.06	79.3 2.4	4.71 −.07	75.2 3.7	7.45 +.01	53.0 2.0	3.08 −.06	41.8 3.3
26.0	14.84 .15	77.0 2.3	4.69 +.02	71.5 3.8	7.48 .06	50.8 2.3	3.06 +.01	38.3 3.5
Nov. 5.0	15.04 .24	74.8 2.0	4.75 .11	67.6 3.8	7.57 .11	48.4 2.5	3.10 .08	34.8 3.6
14.9	15.32 .33	72.9 1.7	4.91 .21	63.8 3.8	7.70 .16	45.9 2.6	3.21 .15	31.1 3.7
24.9	15.69 .41	71.4 1.3	5.17 .30	60.1 3.7	7.88 .21	43.2 2.7	3.39 .22	27.4 3.6
Dec. 4.9	16.13 .47	70.4 0.8	5.51 .39	56.5 3.4	8.11 .25	40.4 2.8	3.64 .28	23.9 3.5
14.8	16.64 .53	69.8 +0.3	5.94 .47	53.3 3.0	8.38 .28	37.7 2.7	3.96 .34	20.5 3.2
24.8	17.18 .56	69.7 −0.2	6.44 .53	50.5 2.6	8.68 .31	35.0 2.6	4.32 .38	17.4 2.9
34.8	17.76 +.59	70.1 −0.7	6.99 +.57	48.1 −2.0	9.00 +.32	32.6 −2.3	4.73 +.42	14.8 −2.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*5 Ursæ Minoris.		α^2 Centauri.		ϵ Bootis.		α^2 Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ +76 13	h m 14 31	° ′ −60 19	h m 14 39	° ′ +27 34	h m 14 44	° ′ −15 31
	s	″	s	″	s	″	s	″
(Dec. 30.8)	46.97 +.84	50.9 −2.4	19.50 +.56	32.4 0.0	39.51 +.32	65.7 −2.6	7.69 +.33	64.4 −1.5
Jan. 9.8	47.86 .92	48.8 1.8	20.07 .58	32.6 −0.5	39.84 .34	63.2 2.3	8.03 .34	66.0 1.6
19.8	48.80 .97	47.3 1.2	20.66 .59	33.3 0.9	40.19 .35	61.1 1.9	8.37 .34	67.7 1.7
29.7	49.78 .98	46.5 −0.5	21.24 .58	34.4 1.4	40.54 .34	59.4 1.5	8.72 .34	69.3 1.6
Feb. 8.7	50.76 .96	46.3 +0.2	21.81 .56	36.0 1.8	40.88 .33	58.2 1.0	9.05 .33	71.0 1.6
18.7	51.70 .91	46.8 0.8	22.35 .52	38.0 2.1	41.20 .31	57.5 −0.5	9.37 .31	72.5 1.5
28.7	52.56 .82	48.0 1.5	22.85 .48	40.2 2.3	41.50 .29	57.3 0.0	9.67 .28	73.9 1.3
Mar. 10.6	53.33 .71	49.7 2.0	23.30 .43	42.6 2.6	41.77 .26	57.6 +0.5	9.94 .26	75.2 1.2
20.6	53.97 .57	52.0 2.4	23.71 .37	45.3 2.7	42.01 .22	58.4 1.0	10.18 .23	76.3 1.0
30.6	54.47 .42	54.6 2.8	24.05 .32	48.0 2.8	42.22 .19	59.6 1.4	10.39 .20	77.2 0.8
Apr. 9.6	54.81 .26	57.5 3.0	24.34 .26	50.8 2.8	42.39 .15	61.1 1.7	10.58 .17	77.9 0.6
19.5	54.99 +.10	60.6 3.2	24.57 .20	53.7 2.8	42.52 .11	62.9 1.9	10.73 .14	78.4 0.5
29.5	55.00 −.06	63.8 3.1	24.74 .14	56.5 2.7	42.61 .08	64.9 2.0	10.86 .11	78.8 0.3
May 9.5	54.86 .22	66.9 3.0	24.85 .08	59.2 2.6	42.67 .04	66.9 2.1	10.96 .08	79.0 0.2
19.4	54.58 .36	69.8 2.8	24.90 +.02	61.7 2.4	42.70 +.01	69.1 2.1	11.02 .05	79.2 −0.1
29.4	54.15 .49	72.5 2.5	24.88 −.04	64.0 2.2	42.70 −.02	71.1 2.0	11.06 +.02	79.2 0.0
June 8.4	53.60 .60	74.8 2.1	24.81 .10	66.1 1.9	42.66 .05	73.0 1.8	11.07 .00	79.1 +0.1
18.4	52.95 .69	76.7 1.7	24.68 .16	67.9 1.6	42.60 .08	74.8 1.6	11.05 −.03	78.9 0.2
28.3	52.22 .77	78.2 1.2	24.50 .21	69.3 1.2	42.51 .10	76.3 1.4	11.01 .06	78.7 0.3
July 8.3	51.42 .83	79.1 0.7	24.27 .25	70.4 0.8	42.40 .12	77.6 1.1	10.94 .08	78.4 0.3
18.3	50.56 .87	79.6 +0.1	24.00 .29	71.0 −0.4	42.26 .14	78.5 0.8	10.85 .10	78.0 0.4
28.3	49.69 .88	79.5 −0.4	23.70 .31	71.2 0.0	42.11 .15	79.1 0.5	10.74 .12	77.6 0.5
Aug. 7.2	48.80 .88	78.8 0.9	23.38 .33	71.0 +0.4	41.95 .16	79.4 +0.1	10.61 .13	77.1 0.5
17.2	47.93 .86	77.7 1.4	23.05 .33	70.3 0.9	41.79 .17	79.4 −0.2	10.48 .14	76.6 0.5
27.2	47.09 .81	76.0 1.9	22.73 .32	69.2 1.3	41.62 .16	79.0 0.6	10.34 .13	76.0 0.5
Sept. 6.1	46.31 .75	73.9 2.4	22.42 .29	67.8 1.6	41.46 .15	78.2 0.9	10.21 .12	75.5 0.5
16.1	45.60 .67	71.3 2.8	22.16 .24	66.0 2.0	41.32 .13	77.1 1.3	10.10 .10	75.0 0.5
26.1	44.98 .57	68.3 3.1	21.95 .18	63.9 2.2	41.20 .11	75.6 1.6	10.00 .08	74.5 0.4
Oct. 6.1	44.47 .45	65.1 3.4	21.81 .10	61.6 2.4	41.11 .07	73.8 1.9	9.94 −.04	74.2 0.3
16.0	44.09 .31	61.5 3.6	21.75 −.02	59.2 2.4	41.06 −.03	71.7 2.2	9.92 .00	74.0 +0.1
26.0	43.86 −.16	57.8 3.8	21.77 +.07	56.8 2.4	41.06 +.02	69.3 2.5	9.94 +.05	74.0 −0.1
Nov. 5.0	43.78 .00	53.9 3.9	21.89 .17	54.5 2.2	41.11 .07	66.7 2.7	10.02 .10	74.1 0.3
15.0	43.86 +.17	50.1 3.8	22.10 .26	52.4 2.0	41.21 .13	63.8 2.9	10.14 .15	74.5 0.5
24.9	44.11 .33	46.3 3.7	22.40 .34	50.5 1.7	41.36 .18	60.9 3.0	10.31 .20	75.2 0.8
Dec. 4.9	44.52 .49	42.7 3.5	22.79 .42	49.0 1.3	41.56 .23	57.9 3.0	10.54 .24	76.1 1.0
14.9	45.09 .64	39.4 3.1	23.25 .49	48.0 0.8	41.81 .27	55.0 2.9	10.80 .28	77.2 1.2
24.8	45.79 .76	36.4 2.7	23.76 .54	47.4 +0.3	42.10 .30	52.1 2.7	11.10 .31	78.5 1.4
34.8	46.61 +.87	34.0 −2.2	24.31 +.57	47.4 −0.2	42.41 +.32	49.5 −2.5	11.42 +.33	80.0 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$14^{h}\,51^{m}$	$+74^{\circ}\,38'$	$14^{h}\,57^{m}$	$+40^{\circ}\,51'$	$15^{h}\,10^{m}$	$-8^{\circ}\,55'$	$15^{h}\,19^{m}$	$+37^{\circ}\,47'$
	s	″	s	″	s	″	s	″
(Dec. 30.8)	3.03 +.71	48.5 −2.6	20.74 +.33	61.7 −2.9	26.35 +.30	58.9 −1.7	52.54 +.31	63.3 −2.9
Jan. 9.8	3.78 .80	46.2 2.1	21.09 .36	59.0 2.4	26.67 .32	60.6 1.7	52.86 .34	60.6 2.6
19.8	4.61 .86	44.4 1.5	21.46 .38	56.8 2.0	27.00 .33	62.2 1.6	53.21 .36	58.2 2.2
29.8	5.48 .88	43.2 0.8	21.84 .38	55.1 1.4	27.33 .33	63.8 1.6	53.57 .36	56.3 1.6
Feb. 8.7	6.37 .88	42.7 −0.1	22.22 .37	53.9 0.9	27.66 .32	65.3 1.4	53.94 .36	54.9 1.1
18.7	7.24 .85	42.9 +0.5	22.59 .36	53.4 −0.3	27.98 .31	66.7 1.3	54.29 .35	54.2 −0.5
28.7	8.05 .78	43.7 1.2	22.93 .33	53.4 +0.3	28.28 .29	67.9 1.1	54.64 .33	54.0 +0.1
Mar. 10.7	8.79 .69	45.2 1.7	23.24 .30	54.1 0.9	28.56 .27	68.8 0.8	54.95 .30	54.4 0.7
20.6	9.43 .58	47.2 2.2	23.53 .26	55.2 1.4	28.81 .24	69.5 0.6	55.24 .27	55.3 1.2
30.6	9.95 .46	49.7 2.6	23.77 .22	56.9 1.8	29.04 .22	70.0 0.4	55.50 .24	56.7 1.6
Apr. 9.6	10.34 .32	52.5 2.9	23.96 .17	58.9 2.2	29.24 .19	70.3 −0.2	55.71 .20	58.5 2.0
19.5	10.59 .17	55.5 3.1	24.12 .13	61.2 2.4	29.42 .16	70.4 0.0	55.89 .16	60.7 2.3
29.5	10.69 +.03	58.7 3.2	24.23 .09	63.7 2.6	29.56 .13	70.3 +0.2	56.03 .12	63.2 2.5
May 9.5	10.65 −.11	61.9 3.1	24.30 +.05	66.4 2.6	29.68 .10	70.1 0.3	56.13 .07	65.8 2.6
19.5	10.47 .24	64.9 3.0	24.32 .00	69.0 2.6	29.77 .07	69.7 0.4	56.18 +.03	68.4 2.6
29.4	10.17 .37	67.8 2.7	24.31 −.03	71.6 2.5	29.83 .04	69.3 0.4	56.20 .00	71.0 2.5
June 8.4	9.74 .48	70.4 2.4	24.25 .07	74.0 2.3	29.86 +.02	68.9 0.5	56.17 −.04	73.4 2.4
18.4	9.21 .57	72.6 2.0	24.17 .10	76.1 2.0	29.86 −.01	68.4 0.5	56.12 .08	75.7 2.1
28.4	8.60 .65	74.3 1.5	24.04 .14	78.0 1.7	29.83 .04	67.9 0.5	56.02 .11	77.7 1.9
July 8.3	7.91 .72	75.6 1.0	23.89 .16	79.5 1.3	29.78 .07	67.4 0.5	55.90 .14	79.4 1.5
18.3	7.17 .77	76.4 +0.5	23.72 .19	80.7 0.9	29.70 .09	66.8 0.5	55.74 .17	80.8 1.2
28.3	6.38 .80	76.7 0.0	23.52 .20	81.4 0.5	29.59 .11	66.3 0.5	55.56 .19	81.8 0.8
Aug. 7.2	5.58 .81	76.4 −0.5	23.31 .22	81.7 +0.1	29.47 .13	65.8 0.5	55.36 .21	82.4 +0.4
17.2	4.78 .80	75.6 1.1	23.09 .22	81.6 −0.3	29.34 .14	65.4 0.4	55.15 .22	82.5 0.0
27.2	3.99 .77	74.3 1.6	22.86 .22	81.0 0.8	29.20 .14	65.0 0.4	54.93 .22	82.3 −0.5
Sept. 6.2	3.24 .73	72.5 2.0	22.65 .21	80.0 1.2	29.06 .14	64.7 0.3	54.72 .21	81.6 0.9
16.1	2.54 .66	70.2 2.5	22.45 .19	78.6 1.6	28.93 .12	64.4 0.2	54.51 .19	80.4 1.3
26.1	1.91 .58	67.6 2.9	22.27 .16	76.8 2.0	28.82 .10	64.3 +0.1	54.33 .17	78.9 1.7
Oct. 6.1	1.38 .48	64.5 3.2	22.13 .12	74.6 2.4	28.74 .07	64.3 −0.1	54.18 .14	77.0 2.1
16.1	0.96 .36	61.2 3.5	22.04 .07	72.0 2.7	28.69 −.03	64.4 0.2	54.06 .09	74.7 2.5
26.0	0.67 .23	57.6 3.7	21.99 −.02	69.1 3.0	28.69 +.02	64.7 0.4	53.99 −.04	72.1 2.8
Nov. 5.0	0.51 −.08	53.8 3.8	21.99 +.04	66.0 3.2	28.73 .07	65.3 0.6	53.97 +.01	69.2 3.0
15.0	0.50 +.07	49.9 3.8	22.06 .10	62.7 3.4	28.82 .12	66.0 0.8	54.01 .07	66.0 3.2
24.9	0.65 .22	46.1 3.8	22.19 .16	59.3 3.4	28.97 .17	67.0 1.1	54.11 .13	62.8 3.3
Dec. 4.9	0.95 .37	42.4 3.6	22.37 .21	55.9 3.4	29.16 .21	68.1 1.3	54.27 .18	59.4 3.3
14.9	1.30 .51	38.9 3.3	22.61 .26	52.6 3.3	29.39 .25	69.5 1.4	54.48 .24	56.1 3.2
24.9	1.97 .64	35.8 2.9	22.90 .31	49.4 3.0	29.66 .29	70.1 1.6	54.74 .28	53.0 3.1
34.8	2.66 +.74	33.1 −2.4	23.23 +.35	46.6 −2.7	29.96 +.32	72.6 −1.6	55.04 +.32	50.0 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*γ² Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$15^{h}\ 20^{m}$	$+72^{\circ}\ 15'$	$15^{h}\ 29^{m}$	$+27^{\circ}\ 7'$	$15^{h}\ 38^{m}$	$+6^{\circ}\ 48'$	$15^{h}\ 44^{m}$	$+4^{\circ}\ 50'$
	s	″	s	″	s	″	s	″
(Dec. 30.9)	54.04 +.56	42.7 −2.9	30.99 +.28	19.7 −2.8	15.20 +.28	28.3 −2.2	43.77 +.27	36.4 −2.1
Jan. 9.8	54.65 .65	40.0 2.5	31.29 .31	17.0 2.5	15.49 .30	26.2 2.0	44.06 .30	34.3 2.0
19.8	55.34 .72	37.8 1.9	31.61 .33	14.7 2.1	15.80 .31	24.2 1.9	44.36 .31	32.4 1.8
29.8	56.08 .76	36.2 1.3	31.95 .34	12.7 1.7	16.11 .32	22.4 1.6	44.68 .32	30.7 1.6
Feb. 8.8	56.85 .78	35.3 −0.6	32.28 .34	11.2 1.3	16.43 .32	20.9 1.4	45.00 .32	29.2 1.3
18.7	57.62 .76	35.0 +0.1	32.62 .33	10.2 0.7	16.75 .31	19.7 1.0	45.31 .31	28.0 1.0
28.7	58.37 .72	35.4 0.8	32.93 .31	9.8 −0.2	17.05 .29	18.9 0.7	45.62 .30	27.1 0.7
Mar. 10.7	59.06 .66	36.5 1.4	33.23 .29	9.8 +0.3	17.34 .28	18.4 −0.3	45.90 .28	26.6 −0.3
20.6	59.69 .58	38.2 1.9	33.51 .26	10.4 0.8	17.60 .25	18.3 +0.1	46.17 .26	26.4 0.0
30.6	60.22 .48	40.4 2.4	33.75 .23	11.4 1.2	17.84 .23	18.5 0.4	46.42 .23	26.6 +0.3
Apr. 9.6	60.64 .37	43.0 2.8	33.97 .20	12.8 1.6	18.06 .20	19.1 0.7	46.64 .21	27.0 0.6
19.6	60.95 .25	46.0 3.1	34.15 .17	14.6 1.9	18.25 .18	19.9 0.9	46.84 .18	27.8 0.8
29.5	61.14 .13	49.1 3.2	34.30 .13	16.6 2.1	18.41 .15	20.9 1.1	47.00 .15	28.7 1.0
May 9.5	61.21 +.01	52.3 3.2	34.41 .10	18.7 2.2	18.54 .12	22.1 1.2	47.14 .13	29.8 1.2
19.5	61.15 −.11	55.5 3.1	34.49 .06	21.0 2.3	18.65 .09	23.4 1.3	47.26 .10	31.0 1.2
29.5	60.98 .23	58.6 3.0	34.53 +.03	23.2 2.2	18.72 .06	24.7 1.4	47.34 .07	32.3 1.3
June 8.4	60.70 .33	61.4 2.7	34.54 −.01	25.4 2.1	18.76 +.03	26.1 1.3	47.39 +.03	33.6 1.3
18.4	60.32 .43	63.9 2.3	34.52 .04	27.5 2.0	18.78 .00	27.4 1.3	47.41 .00	34.8 1.2
28.4	59.85 .51	66.1 1.9	34.46 .07	29.3 1.7	18.76 −.03	28.6 1.2	47.39 −.03	36.0 1.1
July 8.3	59.30 .58	67.8 1.5	34.37 .10	31.0 1.5	18.71 .06	29.8 1.0	47.35 .06	37.1 1.0
18.3	58.69 .64	69.0 1.0	34.26 .13	32.3 1.2	18.63 .09	30.7 0.9	47.28 .09	38.0 0.9
28.3	58.03 .68	69.8 +0.5	34.12 .15	33.3 0.9	18.53 .11	31.6 0.7	47.18 .11	38.8 0.7
Aug. 7.3	57.34 .70	70.0 0.0	33.96 .17	34.0 0.5	18.41 .13	32.2 0.6	47.06 .13	39.5 0.6
17.2	56.63 .71	69.7 −0.6	33.78 .18	34.3 +0.2	18.27 .15	32.7 0.4	46.92 .14	40.0 0.4
27.2	55.92 .70	68.9 1.1	33.60 .18	34.3 −0.2	18.12 .15	32.9 +0.2	46.78 .15	40.3 +0.2
Sept. 6.2	55.23 .68	67.6 1.6	33.42 .18	33.9 0.6	17.96 .15	33.0 0.0	46.62 .15	40.4 0.0
16.2	54.57 .64	65.7 2.1	33.25 .17	33.2 1.0	17.82 .14	32.8 −0.3	46.48 .14	40.3 −0.2
26.1	53.96 .57	63.5 2.5	33.09 .15	32.0 1.3	17.69 .12	32.5 0.5	46.34 .12	40.0 0.4
Oct. 6.1	53.43 .49	60.8 2.9	32.95 .12	30.5 1.7	17.58 .10	31.8 0.8	46.23 .10	39.4 0.6
16.1	52.98 .40	57.7 3.2	32.86 .08	28.7 2.0	17.50 .06	30.9 1.0	46.15 .06	38.7 0.9
26.0	52.64 .29	54.3 3.5	32.80 −.03	26.6 2.3	17.46 −.02	29.8 1.2	46.10 −.02	37.7 1.1
Nov. 5.0	52.41 .16	50.7 3.7	32.79 +.02	24.2 2.5	17.47 +.03	28.4 1.5	46.11 +.02	36.4 1.4
15.0	52.31 −.03	47.0 3.8	32.83 .07	21.5 2.8	17.52 .08	26.8 1.7	46.15 .07	34.9 1.6
25.0	52.35 +.11	43.1 3.8	32.93 .12	18.7 2.9	17.62 .13	25.0 1.9	46.25 .12	33.3 1.8
Dec. 4.9	52.53 .24	39.4 3.7	33.08 .17	15.7 3.0	17.78 .18	23.1 2.0	46.40 .17	31.4 1.9
14.9	52.84 .37	35.7 3.5	33.28 .22	12.7 3.0	17.98 .22	21.0 2.1	46.60 .21	29.5 2.0
24.9	53.27 .49	32.4 3.2	33.52 .26	9.8 2.8	18.21 .26	18.8 2.1	46.83 .25	27.4 2.0
34.9	53.82 +.60	29.4 −2.7	33.80 +.30	7.0 −2.6	18.48 +.28	16.7 −2.1	47.10 +.28	25.4 −2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 15 48	+78° 9′	h m 15 52	+27° 13′	h m 15 53	−22° 16′	h m 15 58	−19° 28′
	s	″	s	″	s	″	s	″
(Dec. 30.9)	22.91 +.67	46.5 −3.1	31.81 +.26	42.0 −2.8	6.80 +.30	24.6 −0.8	20.17 +.29	16.5 −0.9
Jan. 9.8	23.66 .82	43.6 2.6	32.09 .30	39.3 2.6	7.11 .32	25.5 0.9	20.47 .32	17.5 1.0
19.8	24.55 .95	41.2 2.1	32.40 .32	36.9 2.2	7.44 .34	26.5 1.1	20.80 .33	18.6 1.1
29.8	25.55 1.04	39.4 1.5	32.72 .33	34.8 1.8	7.79 .35	27.6 1.1	21.14 .34	19.7 1.1
Feb. 8.8	26.61 1.09	38.2 0.8	33.06 .33	33.2 1.4	8.14 .35	28.8 1.1	21.48 .34	20.9 1.1
18.7	27.71 1.10	37.7 −0.2	33.39 .33	32.1 0.9	8.48 .34	29.9 1.1	21.82 .33	22.0 1.1
28.7	28.80 1.07	37.8 +0.5	33.71 .32	31.5 −0.3	8.82 .33	31.0 1.1	22.15 .32	23.0 1.0
Mar. 10.7	29.84 1.00	38.7 1.1	34.02 .30	31.4 +0.2	9.14 .31	32.0 1.0	22.46 .31	23.9 0.9
20.7	30.79 .90	40.1 1.7	34.30 .27	31.9 0.7	9.44 .29	32.9 0.9	22.76 .29	24.8 0.8
30.6	31.63 .77	42.1 2.2	34.57 .25	32.8 1.1	9.72 .27	33.8 0.8	23.04 .27	25.5 0.6
Apr. 9.6	32.32 .61	44.5 2.6	34.80 .22	34.2 1.5	9.97 .24	34.5 0.7	23.29 .24	26.0 0.5
19.6	32.86 .44	47.3 2.9	35.00 .19	35.9 1.9	10.20 .22	35.1 0.6	23.52 .22	26.5 0.4
29.6	33.21 .26	50.4 3.1	35.17 .15	37.9 2.1	10.40 .19	35.6 0.5	23.73 .19	26.8 0.3
May 9.5	33.38 +.08	53.6 3.2	35.31 .12	40.1 2.3	10.58 .16	36.0 0.4	23.90 .16	27.0 0.2
19.5	33.36 −.11	56.8 3.2	35.41 .08	42.4 2.3	10.72 .13	36.3 0.3	24.04 .13	27.2 0.1
29.5	33.17 .29	60.0 3.1	35.48 .05	44.8 2.3	10.83 .09	36.6 0.2	24.16 .10	27.3 −0.1
June 8.4	32.80 .45	63.0 2.9	35.51 +.01	47.1 2.3	10.91 .06	36.8 0.2	24.24 .06	27.3 0.0
18.4	32.26 .61	65.7 2.6	35.50 −.02	40.3 2.1	10.95 +.02	37.0 −0.1	24.28 +.03	27.3 0.0
28.4	31.58 .75	68.1 2.2	35.46 .06	51.3 1.9	10.95 −.01	37.0 0.0	24.29 −.01	27.2 +0.1
July 8.4	30.77 .87	70.1 1.8	35.39 .09	53.0 1.6	10.93 .04	37.1 0.0	24.27 .04	27.1 0.1
18.3	29.85 .97	71.6 1.3	35.29 .12	54.5 1.4	10.86 .08	37.0 +0.1	24.21 .07	27.0 0.2
28.3	28.85 1.04	72.7 0.8	35.15 .15	55.8 1.0	10.77 .11	36.9 0.2	24.12 .10	26.8 0.2
Aug. 7.3	27.78 1.10	73.2 +0.3	34.99 .17	56.6 0.7	10.65 .13	36.7 0.2	24.01 .13	26.5 0.3
17.3	26.66 1.12	73.2 −0.2	34.82 .18	57.2 +0.3	10.51 .15	36.4 0.3	23.87 .14	26.2 0.3
27.2	25.54 1.13	72.8 0.7	34.63 .19	57.4 0.0	10.35 .16	36.0 0.4	23.72 .16	25.9 0.4
Sept. 6.2	24.42 1.10	71.8 1.2	34.44 .19	57.1 −0.4	10.20 .16	35.6 0.5	23.56 .16	25.5 0.4
16.2	23.34 1.05	70.3 1.7	34.25 .18	56.6 0.8	10.04 .15	35.1 0.5	23.41 .15	25.1 0.4
26.1	22.32 .98	68.3 2.2	34.08 .16	55.6 1.1	9.90 .13	34.6 0.5	23.27 .13	24.6 0.4
Oct. 6.1	21.39 .88	65.9 2.6	33.93 .14	54.3 1.5	9.78 .10	34.0 0.5	23.15 .10	24.2 0.4
16.1	20.57 .75	63.1 3.0	33.81 .10	52.6 1.9	9.69 .06	33.5 0.5	23.05 .07	23.8 0.3
26.1	19.90 .60	60.0 3.3	33.73 .06	50.6 2.2	9.65 −.02	33.1 0.4	23.01 −.02	23.6 0.2
Nov. 5.0	19.39 .43	56.6 3.5	33.69 −.01	48.2 2.5	9.66 +.03	32.8 0.3	23.01 +.03	23.4 +0.1
15.0	19.05 .24	53.0 3.7	33.71 +.04	45.7 2.7	9.72 .08	32.6 +0.1	23.07 .08	23.4 −0.1
25.0	18.92 −.04	49.3 3.7	33.78 .10	42.9 2.9	9.83 .14	32.6 −0.1	23.17 .13	23.5 0.3
Dec. 4.9	18.98 +.17	45.5 3.7	33.90 .15	40.0 2.9	10.00 .19	32.8 0.3	23.33 .18	23.9 0.4
14.9	19.25 .37	41.9 3.5	34.08 .20	37.0 3.0	10.21 .24	33.2 0.5	23.53 .23	24.4 0.6
24.9	19.71 .55	38.5 3.3	34.30 .24	34.1 2.9	10.47 .28	33.8 0.7	23.78 .27	25.1 0.8
34.9	20.35 +.73	35.3 −2.9	34.56 +.28	31.3 −2.7	10.76 +.31	34.5 −0.8	24.07 +.30	26.0 −0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*Groombridge 2320.		δ Ophiuchi.		τ Herculis.		α Scorpii. (*Antares.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$16^{h}\ 5^{m}$	$+68^{\circ}\ 7'$	$16^{h}\ 7^{m}$	$-3^{\circ}\ 22'$	$16^{h}\ 16^{m}$	$+46^{\circ}\ 35'$	$16^{h}\ 21^{m}$	$-26^{\circ}\ 9'$
	s	"	s	"	s	"	s	"
(Dec. 30.9)	57.23 +.37	33.7 −3.3	56.71 +.26	51.0 −1.6	3.27 +.26	59.3 −3.3	55.16 +.29	37.9 −0.4
Jan. 9.9	57.66 .48	30.6 2.9	56.99 .29	52.6 1.6	3.56 .31	56.1 3.0	55.46 .31	38.4 0.6
19.8	58.18 .55	27.9 2.4	57.29 .31	54.3 1.6	3.89 .35	53.4 2.5	55.79 .34	39.0 0.7
29.8	58.75 .60	25.8 1.8	57.60 .32	55.8 1.4	4.25 .37	51.0 2.0	56.13 .35	39.8 0.8
Feb. 8.8	59.37 .63	24.3 1.2	57.92 .32	57.1 1.3	4.64 .39	49.3 1.5	56.48 .36	40.6 0.8
18.8	60.01 .64	23.4 −0.5	58.23 .31	58.3 1.0	5.03 .39	48.1 0.9	56.84 .35	41.5 0.9
28.7	60.65 .63	23.2 +0.1	58.54 .30	59.2 0.8	5.41 .38	47.6 −0.2	57.19 .34	42.4 0.8
Mar. 10.7	61.26 .60	23.7 0.8	58.84 .29	59.9 0.5	5.79 .37	47.7 +0.4	57.53 .33	43.2 0.8
20.7	61.84 .55	24.9 1.4	59.12 .27	60.2 −0.2	6.15 .34	48.4 1.0	57.85 .32	44.0 0.8
30.7	62.36 .49	26.6 2.0	59.39 .25	60.3 0.0	6.47 .31	49.7 1.6	58.16 .30	44.8 0.7
Apr. 9.6	62.81 .41	28.8 2.5	59.63 .23	60.2 +0.3	6.77 .27	51.5 2.1	58.44 .27	45.4 0.6
19.6	63.17 .32	31.5 2.8	59.85 .21	59.8 0.5	7.02 .23	53.8 2.4	58.70 .25	46.0 0.6
29.6	63.45 .23	34.5 3.1	60.04 .18	59.3 0.6	7.23 .19	56.4 2.7	58.94 .22	46.6 0.5
May 9.5	63.63 .13	37.6 3.2	60.21 .15	58.6 0.8	7.39 .14	59.2 2.9	59.15 .19	47.1 0.5
19.5	63.71 +.03	40.9 3.3	60.35 .12	57.7 0.8	7.51 .09	62.2 3.0	59.32 .16	47.5 0.4
29.5	63.70 −.06	44.2 3.2	60.46 .09	56.9 0.9	7.58 +.04	65.2 3.0	59.47 .13	48.0 0.4
June 8.5	63.59 .16	47.3 3.1	60.53 .06	56.0 0.9	7.60 −.01	68.2 2.9	59.58 .09	48.3 0.4
18.4	63.39 .25	50.3 2.8	60.58 +.03	55.0 0.9	7.57 .05	71.1 2.7	59.65 .05	48.7 0.3
28.4	63.10 .33	52.9 2.5	60.59 .00	54.2 0.8	7.49 .10	73.7 2.5	59.68 +.01	49.0 0.2
July 8.4	62.74 .40	55.2 2.1	60.57 −.04	53.4 0.8	7.36 .14	76.0 2.2	59.67 −.03	49.2 0.2
18.4	62.31 .46	57.1 1.7	60.51 .07	52.6 0.7	7.20 .19	78.0 1.8	59.63 .06	49.3 −0.1
28.3	61.82 .51	58.6 1.2	60.43 .10	52.0 0.6	6.99 .22	79.6 1.4	59.55 .10	49.4 0.0
Aug. 7.3	61.28 .56	59.5 0.7	60.32 .12	51.4 0.5	6.76 .25	80.8 1.0	59.43 .13	49.4 +0.1
17.3	60.71 .58	60.0 +0.2	60.19 .14	50.9 0.4	6.50 .27	81.5 +0.5	59.30 .15	49.3 0.2
27.2	60.12 .59	59.9 −0.3	60.04 .15	50.5 0.3	6.22 .28	81.8 0.0	59.14 .16	49.0 0.3
Sept. 6.2	59.52 .59	59.3 0.9	59.89 .15	50.3 +0.2	5.93 .29	81.6 −0.5	58.97 .17	48.7 0.4
16.2	58.94 .57	58.1 1.4	59.74 .15	50.2 0.0	5.65 .28	80.9 0.9	58.80 .17	48.3 0.5
26.2	58.39 .53	56.5 1.9	59.59 .13	50.2 −0.1	5.38 .26	79.7 1.4	58.64 .15	47.8 0.5
Oct. 6.1	57.88 .48	54.4 2.3	59.47 .11	50.4 0.3	5.13 .23	78.1 1.8	58.50 .13	47.2 0.6
16.1	57.43 .41	51.9 2.7	59.38 .07	50.8 0.4	4.92 .19	76.0 2.3	58.39 .09	46.6 0.6
26.1	57.05 .33	49.0 3.1	59.32 −.04	51.3 0.6	4.75 .14	73.5 2.7	58.32 −.05	46.0 0.6
Nov. 5.0	56.77 .23	45.7 3.4	59.31 +.01	52.0 0.8	4.63 .09	70.7 3.0	58.30 .00	45.5 0.5
15.0	56.59 .13	42.2 3.6	59.34 .06	53.0 1.0	4.58 −.02	67.6 3.2	58.33 +.06	45.0 0.4
25.0	56.52 −.01	38.5 3.7	59.42 .11	54.1 1.2	4.59 +.04	64.2 3.4	58.41 .11	44.7 0.2
Dec. 5.0	56.56 +.10	34.8 3.8	59.55 .16	55.4 1.4	4.66 .11	60.8 3.5	58.55 .17	44.6 +0.1
14.9	56.72 .21	31.0 3.7	59.73 .20	56.9 1.5	4.80 .17	57.2 3.5	58.74 .22	44.6 −0.1
24.9	56.99 .32	27.5 3.5	59.95 .24	58.4 1.6	5.00 .23	53.8 3.4	58.98 .26	44.8 0.3
34.9	57.36 +.42	24.1 −3.2	60.21 +.27	60.0 −1.6	5.26 +.28	50.5 −3.1	59.26 +.30	45.1 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		*A Draconis.		ζ Ophiuchi.		*α Trianguli Australis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 16 22	° ′ +61 46	h m 16 28	° ′ +69 1	h m 16 30	° ′ −10 19	h m 16 35	° ′ −68 47
	s	″	s	″	s	″	s	″
(Dec. 30.9)	18.73 +.31	67.8 −3.4	11.05 +.34	36.6 −3.4	25.98 +.25	12.2 −1.2	43.44 +.57	61.5 +1.8
Jan. 9.9	19.07 .38	64.5 3.1	11.45 44	33.4 3.1	26.25 .28	13.4 1.3	44.06 .65	59.9 1.5
19.8	19.48 .44	61.7 2.6	11.93 .53	30.5 2.6	26.54 .30	14.7 1.2	44.74 .72	58.6 1.1
29.8	19.94 .48	59.3 2.1	12.49 .59	28.2 2.1	26.85 .32	15.9 1.2	45.48 .76	57.7 0.6
Feb. 8.8	20.44 .51	57.5 1.4	13.11 .63	26.4 1.5	27.17 .32	17.1 1.1	46.26 .79	57.3 +0.2
18.8	20.95 .52	56.4 0.8	13.76 .66	25.3 0.8	27.49 .32	18.1 0.9	47.05 .80	57.3 −0.2
28.7	21.47 .52	56.0 −0.1	14.42 .66	24.8 −0.1	27.81 .31	18.9 0.7	47.85 .79	57.7 0.6
Mar. 10.7	21.98 .50	56.2 +0.6	15.07 .64	25.0 +0.6	28.12 .30	19.6 0.5	48.63 .77	58.5 1.0
20.7	22.46 .46	57.1 1.2	15.68 .60	25.9 1.2	28.41 .29	20.0 0.3	49.39 .74	59.6 1.3
30.7	22.91 .42	58.6 1.8	16.25 .54	27.4 1.8	28.70 .27	20.2 −0.1	50.11 .70	61.1 1.6
Apr. 9.6	23.30 .37	60.6 2.3	16.75 .46	29.5 2.3	28.96 .25	20.3 0.0	50.78 .64	62.9 1.9
19.6	23.64 .30	63.1 2.7	17.18 .38	32.0 2.7	29.20 .23	20.1 +0.2	51.39 .58	64.9 2.1
29.6	23.90 .23	66.0 3.0	17.51 .29	34.9 3.0	29.42 .21	19.8 0.3	51.94 .51	67.1 2.3
May 9.5	24.10 .16	69.1 3.2	17.75 .19	38.0 3.2	29.61 .18	19.4 0.5	52.42 .43	69.5 2.4
19.5	24.22 .08	72.3 3.3	17.89 +.09	41.3 3.3	29.78 .15	18.9 0.5	52.81 .35	72.0 2.5
29.5	24.27 +.01	75.6 3.2	17.93 −.01	44.6 3.3	29.92 .12	18.4 0.6	53.11 .25	74.6 2.6
June 8.5	24.24 −.07	78.8 3.1	17.86 .12	47.9 3.2	30.02 .09	17.8 0.6	53.31 .16	77.1 2.6
18.4	24.14 .14	81.8 3.0	17.70 .21	51.0 3.0	30.09 .05	17.2 0.6	53.42 +.06	79.7 2.5
28.4	23.97 .20	84.7 2.7	17.44 .30	53.8 2 7	30.13 +.02	16.6 0.6	53.43 −.04	82.1 2.3
July 8.4	23 73 .27	87.1 2.3	17.09 .38	56.3 2.3	30.12 −.02	16.1 0.5	53.34 .14	84.3 2.1
18.4	23.44 .32	89.3 1.9	16.67 .46	58.5 1.9	30.09 .05	15.6 0.5	53.15 .23	86.2 1.8
28.3	23.09 .37	91.0 1.5	16.18 .52	60.2 1.5	30.02 .09	15.1 0.4	52.87 .32	87.9 1.5
Aug. 7.3	22.70 .41	92.2 1.0	15.63 .57	61.5 1.0	29.92 .11	14.7 0.4	52.52 .39	89.2 1.1
17.3	22.27 .44	92.9 +0.5	15.04 .61	62.3 +0.5	29.79 .14	14.3 0.4	52.10 .44	90.0 0.6
27.2	21.82 .45	93.2 0.0	14.42 .63	62.5 0.0	29.64 .15	13.9 0.3	51.64 .48	90.4 −0.2
Sept. 6.2	21.36 .46	92.9 −0.5	13.79 .63	62.2 −0.5	29.49 .16	13.7 0.2	51.15 .49	90.4 +0.3
16.2	20.91 .45	92.1 1.1	13.16 .62	61.4 1.0	29.33 .16	13.4 0.2	50.66 .48	89.8 0.8
26.2	20.47 .42	90.7 1.6	12.55 .59	60.1 1.6	29.18 .14	13.3 +0.1	49.19 .45	88.8 1.2
Oct. 6.1	20.07 .39	88.9 2.0	11.98 .54	58.3 2.0	29.05 .12	13.2 0.0	49.77 .39	87.4 1.7
16.1	19.71 .33	86.7 2.5	11.46 .48	56.1 2.5	28.94 .09	13.3 −0.1	49.41 .31	85.5 2.0
26 1	19.40 .27	84.0 2.9	11.02 .40	53.4 2.9	28.87 .05	13.4 0.2	49.15 .21	83.4 2.3
Nov. 5.1	19.17 .19	80.9 3.2	10.67 .30	50.4 3.2	28.84 −.01	13.7 0.4	48.99 −.10	80.9 2.5
15.0	19.02 .11	77.6 3.5	10.42 .20	47.0 3.5	28.85 +.04	14.2 0.6	48.95 +.02	78.4 2.6
25.0	18.96 −.02	74.0 3.6	10.28 −.08	43.4 3.7	28.92 .09	14.9 0.7	49.04 .15	75.8 2.6
Dec. 5.0	18.98 +.07	70.3 3.7	10.25 +.04	39.7 3.7	29.03 .14	15.7 0.9	49.25 .28	73.2 2.5
14.9	19.10 .17	66.6 3.7	10.35 .16	36.0 3.7	29.20 .19	16.6 1.0	49.59 .40	70.8 2.3
24.9	19.32 .25	63.0 3.5	10.57 .27	32.4 3.5	29.41 .23	17.7 1.1	50.04 .50	68.6 2.0
34.9	19.61 +.33	59.5 −3.3	10.89 +.38	28.9 −3.3	29.65 +.26	18.9 −1.2	50.60 +.60	66.7 +1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Herculis.		κ Ophiuchi.		d Herculis.		*ε Ursæ Minoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 38	° ′ +39 8	h m 16 51	° ′ +9 33	h m 16 57	° ′ +33 44	h m 16 58	° ′ +82 13
	s	″	s	″	s	″	s	″
(Dec. 30.9)	41.85 +.23	64.8 −3.2	52.95 +.21	48.5 −2.1	5.01 +.20	33.2 −3.1	22.23+ .49	50.4 −3.4
Jan. 9.9	42.10 .27	61.7 3.0	53.18 .25	46.4 2.1	5.23 .25	30.2 2.9	22.87 .78	47.2 3.1
19.9	42.39 .31	58.9 2.6	53.45 .27	44.4 1.9	5.50 .28	27.5 2.6	23.78 1.04	44.3 2.7
29.8	42.71 .33	56.5 2.2	53.73 .29	42.6 1.7	5.80 .31	25.1 2.2	24.94 1.26	41.8 2.2
Feb. 8.8	43.06 .35	54.6 1.7	54.03 .30	41.1 1.4	6.11 .32	23.1 1.7	26.30 1.44	39.8 1.7
18.8	43.41 .35	53.2 1.1	54.33 .31	39.9 1.1	6.44 .33	21.6 1.2	27.80 1.55	38.4 1.0
28.8	43.76 .35	52.4 −0.5	54.64 .31	39.0 0.7	6.78 .34	20.7 0.6	29.38 1.61	37.7 −0.4
Mar. 10.7	44.11 .34	52.2 +0.1	54.94 .30	38.5 −0.3	7.11 .33	20.3 −0.1	30.99 1.60	37.6 +0.3
20.7	44.44 .33	52.7 0.7	55.23 .29	38.5 +0.1	7.44 .32	20.5 +0.5	32.56 1.53	38.2 0.9
30.7	44.76 .30	53.7 1.3	55.51 .27	38.8 0.5	7.74 .30	21.3 1.0	34.04 1.41	39.4 1.5
Apr. 9.6	45.05 .27	55.2 1.7	55.78 .25	39.5 0.8	8.03 .28	22.6 1.5	35.37 1.24	41.2 2.0
19.6	45.31 .24	57.1 2.2	56.02 .23	40.5 1.1	8.30 .25	24.3 2.0	36.51 1.03	43.5 2.5
29.6	45.53 .21	59.5 2.5	56.24 .21	41.7 1.4	8.53 .22	26.5 2.3	37.42 .79	46.1 2.8
May 9.6	45.72 .17	62.1 2.7	56.44 .18	43.2 1.6	8.74 .18	28.9 2.5	38.08 .52	49.1 3.1
19.5	45.87 .13	64.9 2.8	56.61 .15	44.8 1.7	8.90 .15	31.5 2.7	38.46+ .25	52.3 3.2
29.5	45.97 .08	67.8 2.9	56.75 .12	46.5 1.7	9.03 .11	34.3 2.8	38.57− .04	55.5 3.3
June 8.5	46.03 +.04	70.6 2.9	56.85 .09	48.3 1.7	9.12 .07	37.1 2.8	38.39 .32	58.8 3.2
18.5	46.04 −.01	73.4 2.7	56.92 .05	50.0 1.7	9.16 +.02	39.8 2.7	37.93 .59	61.9 3.1
28.4	46.02 .05	76.1 2.5	56.96 +.02	51.6 1.6	9.17 −.02	42.4 2.5	37.21 .84	64.9 2.8
July 8.4	45.94 .09	78.5 2.3	56.96 −.02	53.1 1.5	9.13 .06	44.8 2.3	36.25 1.08	67.6 2.5
18.4	45.83 .13	80.6 1.9	56.92 .05	54.5 1.3	9.05 .10	47.0 2.0	35.06 1.29	69.9 2.2
28.3	45.68 .17	82.4 1.6	56.85 .09	55.7 1.1	8.93 .14	48.8 1.7	33.68 1.46	71.9 1.8
Aug. 7.3	45.50 .20	83.8 1.2	56.74 .12	56.7 0.9	8.77 .17	50.3 1.3	32.14 1.61	73.4 1.3
17.3	45.28 .22	84.7 0.8	56.61 .14	57.5 0.7	8.59 .20	51.5 0.9	30.48 1.72	74.5 0.8
27.3	45.05 .24	85.3 +0.3	56.46 .16	58.0 0.4	8.39 .21	52.2 0.5	28.71 1.80	75.1 +0.3
Sept. 6.2	44.81 .25	85.4 −0.1	56.30 .17	58.3 +0.2	8.16 .23	52.6 +0.1	26.89 1.83	75.2 −0.1
16.2	44.56 .25	85.1 0.6	56.13 .17	58.4 −0.1	7.94 .23	52.5 −0.3	25.07 1.82	74.8 0.6
26.2	44.32 23	84.3 1.0	55.96 .16	58.2 0.3	7.71 .22	51.9 0.7	23.26 1.78	73.9 1.1
Oct. 6.2	44.09 .21	83.0 1.5	55.80 .14	57.7 0.6	7.50 .20	51.0 1.2	21.53 1.68	72.6 1.6
16.1	43.90 .18	81.4 1.9	55.67 .12	57.0 0.8	7.31 .17	49.6 1.6	19.91 1.55	70.7 2.1
26.1	43.74 .14	79.3 2.3	55.57 .08	56.0 1.1	7.16 .13	47.9 2.0	18.44 1.38	68.4 2.5
Nov. 5.1	43.63 .09	76.8 2.6	55.51 −.04	54.8 1.4	7.04 .09	45.7 2.3	17.17 1.16	65.7 2.9
15.0	43.57 −.03	74.1 2.9	55.49 .00	53.3 1.6	6.98 −.04	43.2 2.6	16.13 .91	62.7 3.2
25.0	43.56 +.03	71.1 3.1	55.51 +.05	51.6 1.8	6.96 +.01	40.5 2.9	15.36 .63	59.4 3.4
Dec. 5.0	43.62 .08	67.9 3.3	55.59 .10	49.7 2.0	7.00 .07	37.6 3.0	14.87 .33	55.9 3.5
15.0	43.73 .14	64.5 3.3	55.72 .15	47.7 2.1	7.10 .12	34.5 3.1	14.70− .02	52.4 3.6
24.9	43.90 .20	61.3 3.2	55.89 .19	45.6 2.1	7.25 .17	31.3 3.1	14.85+ .30	48.8 3.5
34.9	44.12 +.24	58.1 −3.1	56.09 +.23	43.5 −2.1	7.45 +.22	28.3 −3.0	15.29+ .60	45.5 −3.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^1 Herculis.		44 Ophiuchi.		β Draconis.		α Ophiuchi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$17^{h}\ 9^{m}$	$+14^{\circ}\ 31'$	$17^{h}\ 18^{m}$	$-24^{\circ}\ 3'$	$17^{h}\ 27^{m}$	$+52^{\circ}\ 23'$	$17^{h}\ 29^{m}$	$+12^{\circ}\ 38'$
	s	''	s	''	s	''	s	''
(Dec. 30.9)	4.36 +.20	40.7 −2.3	54.52 +.23	43.9 −0.2	38.77 +.17	18.7 −3.5	15.51 +.18	51.7 −2.2
Jan. 9.9	4.58 .23	38.4 2.2	54.77 .27	44.2 0.3	38.97 .23	15.2 3.3	15.71 .22	49.5 2.1
19.9	4.83 .26	36.2 2.1	55.05 .29	44.5 0.4	39.24 .29	12.1 3.0	15.95 .25	47.4 2.0
29.9	5.10 .28	34.3 1.8	55.36 .32	44.9 0.4	39.55 .34	9.2 2.6	16.20 .27	45.5 1.8
Feb. 8.8	5.39 .30	32.6 1.5	55.68 .33	45.3 0.4	39.91 .37	6.9 2.1	16.48 .29	43.9 1.5
18.8	5.69 .30	31.3 1.1	56.02 .34	45.7 0.4	40.29 .40	5.1 1.5	16.78 .30	42.6 1.1
28.8	6.00 .31	30.4 0.7	56.36 .34	46.2 0.4	40.70 .41	3.9 0.9	17.08 .30	41.7 0.7
Mar. 10.7	6.30 .30	29.9 −0.2	56.69 .34	46.5 0.3	41.12 .42	3.3 −0.2	17.38 .30	41.1 −0.3
20.7	6.60 .29	29.9 +0.2	57.03 .33	46.8 0.3	41.53 .41	3.4 +0.4	17.68 .30	41.0 +0.1
30.7	6.89 .28	30.3 0.6	57.35 .32	47.1 0.2	41.93 .39	4.1 1.1	17.97 .29	41.4 0.5
Apr. 9.7	7.16 .26	31.1 1.0	57.67 .30	47.3 0.1	42.31 .37	5.5 1.6	18.25 .27	42.1 0.9
19.6	7.42 .24	32.2 1.3	57.96 .29	47.4 0.1	42.66 .33	7.4 2.1	18.52 .26	43.2 1.2
29.6	7.65 .22	33.7 1.6	58.24 .27	47.5 −0.1	42.97 .29	9.8 2.6	18.77 .24	44.6 1.5
May 9.6	7.86 .20	35.4 1.8	58.50 .24	47.5 0.0	43.24 .24	12.5 2.9	19.00 .21	46.2 1.7
19.6	8.05 .17	37.3 2.0	58.73 .21	47.6 0.0	43.46 .19	15.6 3.1	19.20 .19	48.1 1.9
29.5	8.20 .13	39.3 2.0	58.92 .18	47.6 0.0	43.62 .14	18.8 3.3	19.37 .15	50.0 2.0
June 8.5	8.32 .10	41.3 2.0	59.09 .15	47.7 −0.1	43.73 .08	22.1 3.3	19.51 .12	52.0 2.0
18.5	8.40 .06	43.4 2.0	59.22 .11	47.8 0.1	43.77 +.02	25.4 3.2	19.61 .08	54.0 2.0
28.4	8.44 +.03	45.3 1.9	59.30 .06	47.9 0.1	43.76 −.04	28.6 3.1	19.68 .05	55.9 1.9
July 8.4	8.45 −.01	47.1 1.7	59.35 +.02	48.0 0.1	43.68 .10	31.6 2.9	19.70 +.01	57.7 1.7
18.4	8.42 .05	48.7 1.5	59.35 −.02	48.1 0.1	43.55 .16	34.3 2.6	19.69 −.03	59.4 1.6
28.4	8.35 .08	50.2 1.3	59.31 .06	48.2 0.1	43.37 .21	36.7 2.2	19.64 .07	60.8 1.4
Aug. 7.3	8.25 .12	51.4 1.1	59.23 .10	48.3 −0.1	43.14 .25	38.7 1.8	19.55 .10	62.1 1.1
17.3	8.12 .14	52.3 0.8	59.11 .13	48.3 0.0	42.86 .29	40.4 1.4	19.43 .13	63.1 0.9
27.3	7.97 .16	53.0 0.5	58.97 .15	48.3 0.0	42.55 .32	41.5 0.9	19.29 .16	63.9 0.6
Sept. 6.3	7.79 .18	53.4 +0.3	58.81 .17	48.2 +0.1	42.22 .34	42.2 +0.4	19.12 .17	64.4 0.4
16.2	7.62 .18	53.5 0.0	58.63 .17	48.1 0.2	41.87 .35	42.4 0.0	18.95 .18	64.6 +0.1
26.2	7.44 .17	53.3 −0.3	58.46 .17	47.8 0.3	41.52 .35	42.1 −0.6	18.77 .18	64.5 −0.2
Oct. 6.2	7.27 .16	52.9 0.6	58.29 .16	47.5 0.3	41.18 .33	41.3 1.1	18.60 .16	64.1 0.5
16.1	7.12 .13	52.1 0.9	58.15 .13	47.2 0.3	40.86 .30	39.9 1.6	18.44 .14	63.5 0.8
26.1	7.00 .10	51.0 1.2	58.04 .09	46.8 0.4	40.58 .26	38.1 2.0	18.31 .11	62.6 1.1
Nov. 5.1	6.92 .06	49.6 1.5	57.97 −.05	46.5 0.3	40.34 .21	35.8 2.5	18.22 .07	61.4 1.3
15.1	6.88 −.02	48.0 1.8	57.94 .00	46.2 0.3	40.16 .15	33.2 2.8	18.17 −.03	59.9 1.6
25.0	6.89 +.03	46.1 2.0	57.97 +.05	45.9 0.2	40.04 .08	30.2 3.1	18.16 +.01	58.2 1.8
Dec. 5.0	6.94 .08	44.0 2.2	58.04 .10	45.7 +0.1	39.99 −.01	26.9 3.4	18.20 .06	56.3 2.0
15.0	7.05 .13	41.8 2.3	58.17 .15	45.7 0.0	40 02 +.06	23.4 3.5	18.28 .11	54.2 2.1
25.0	7.20 .17	39.5 2.3	58.35 .20	45.7 −0.1	40.11 .13	19.9 3.5	18.41 .15	52.1 2.2
34.9	7.39 +.21	37.2 −2.3	58.58 +.24	45.8 −0.2	40.27 +.19	16.4 −3.4	18.59 +.19	49.9 −2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*ω Draconis.		μ Herculis.		*ψ¹ Draconis (*pr.*)		γ Draconis	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	17 37	+68 48	17 41	+27 47	17 44	+72 12	17 53	+51 29
	s	″	s	″	s	″	s	″
Jan. 0.0	36.46 +.16	36.2 −3.6	40.06 +.16	25.8 −2.8	2.19 +.15	17.7 −3.6	44.71 +.13	62.7 −3.5
9.9	36.68 .26	32.7 3.4	40.24 .20	23.0 2.7	2.41 .28	14.2 3.4	44.87 .20	59.3 3.3
19.9	37.01 .38	29.4 3.1	40.46 .24	20.4 2.4	2.75 .41	10.9 3.1	45.10 .25	56.0 3.1
29.9	37.44 .47	26.5 2.7	40.71 .26	17.9 2.3	3.22 .52	7.9 2.8	45.38 .30	53.1 2.8
Feb. 8.8	37.94 .54	24.1 2.2	40.99 .29	15.9 1.9	3.78 .61	5.4 2.3	45.70 .34	50.5 2.3
18.8	38.51 .60	22.1 1.6	41.29 .30	14.2 1.4	4.43 .68	3.4 1.7	46.06 .37	48.5 1.8
28.8	39.13 .63	20.8 1.0	41.60 .31	13.0 0.9	5.13 .73	2.0 1.0	46.45 .40	47.0 1.1
Mar. 10.8	39.77 .64	20.2 −0.3	41.91 .32	12.4 −0.4	5.87 .75	1.3 −0.4	46.85 .41	46.2 −0.5
20.7	40.41 .64	20.3 +0 4	42.23 .31	12.3 +0.2	6.62 .74	1.3 +0.3	47.26 .41	46.1 +0.2
30.7	41.04 .61	21.0 1.0	42.54 .31	12.7 0.7	7.35 .72	1.9 0.9	47.66 .40	46.5 0.8
Apr. 9.7	41.63 .57	22.3 1.6	42.84 .29	13.7 1.2	8.04 .67	3.2 1.6	48.05 .38	47.6 1.4
19.7	42.17 .51	24.2 2.2	43.12 .27	15.1 1.6	8.68 .60	5.0 2.1	48.41 .35	49.3 1.9
29.6	42.65 .44	26.7 2.6	43.38 .25	16 9 2.0	9.24 .51	7.3 2.6	48.75 .32	51.5 2.4
May 9.6	43.04 .35	29.5 3.0	43.62 .22	19.0 2.3	9.70 .41	10.1 2.9	49.05 .27	54.1 2.8
19.6	43.35 .26	32.6 3.2	43.83 .19	21.4 2.5	10.06 .30	13.2 3.2	49.30 .23	57.1 3.1
29.5	43.56 .16	35.9 3.4	44.01 .16	24.0 2.6	10.30 .18	16.5 3.4	49.50 .17	60.2 3.2
June 8.5	43.67 +.06	39.3 3.4	44.15 .12	26.7 2.7	10.43 +.06	19.9 3.4	49.64 .12	63.5 3.3
18.5	43.67 −.04	42.8 3.4	44.25 .08	29.3 2.6	10.43 −.06	23.2 3.4	49.73 +.06	66.9 3.3
28.5	43.58 .15	46.1 3.3	44.31 +.04	31.9 2.5	10.31 .18	26.6 3.3	49.76 .00	70.2 3.2
July 8.4	43.38 .25	49.3 3.0	44.32 −.01	34.4 2.4	10.07 .30	29.8 3.1	49.72 −.06	73.3 3.0
18.4	43.09 .34	52.2 2.7	44.29 .05	36.6 2.2	9.72 .40	32.7 2.8	49.63 .12	76.2 2.8
28.4	42.71 .42	54.7 2.4	44.22 .09	38.7 1.9	9.27 .50	35.3 2.4	49.48 .18	78.9 2.5
Aug. 7.4	42.25 .49	56.9 2.0	44.11 .13	40.4 1.6	8.72 .59	37.6 2.1	49.28 .23	81.2 2.1
17.3	41.73 .55	58.7 1.5	43.97 .16	41.8 1.2	8.09 .66	39.4 1.6	49.03 .27	83.1 1.7
27.3	41.15 .60	60.0 1.1	43.80 .18	42.9 0.9	7.39 .72	40.8 1.1	48.75 .30	84.6 1.3
Sept. 6.3	40.53 .63	60.9 0.6	43.60 .20	43.6 0.5	6.65 .76	41.7 0.6	48.43 .33	85.7 0.8
16.2	39.89 .65	61.2 +0.1	43.39 .21	43.9 +0.1	5.88 .78	42.1 +0.1	48.09 .34	86.2 +0.3
26.2	39.24 64	60.9 −0.5	43.18 .21	43.9 −0.3	5.10 .78	41.9 −0.4	47.75 .34	86.3 −0.2
Oct. 6.2	38.60 .62	60.2 1.0	42.97 .20	43.4 0.7	4.33 .76	41.3 0.9	47.41 .33	85.8 0.7
16.2	38.00 .58	58.9 1.5	42.78 .18	42.5 1.1	3.59 .71	40.1 1.4	47.09 .31	84.8 1.2
26.1	37.44 .53	57.1 2.0	42.61 .15	41.3 1.4	2.90 .65	38.4 1.9	46.79 .28	83.3 1.7
Nov. 5.1	36.95 .45	54.9 2.5	42.48 .11	39.6 1.8	2.29 .57	36.2 2.4	46.54 .23	81.4 2.2
15.1	36.54 .36	52.2 2.8	42.38 .07	37.7 2.1	1.78 .46	33.6 2.8	46.33 .18	79.0 2.6
25.1	36.23 .26	49.2 3.2	42.34 −.02	35.4 2.4	1.37 .35	30.6 3.1	46.18 .12	76.2 2.9
Dec. 5.0	36.03 .15	45.9 3.4	42.34 +.03	32.9 2.6	1.09 .22	27.4 3.4	46.10 −.05	73.1 3.2
15.0	35.94 −.03	42.4 3.6	42.40 .08	30.1 2.8	0.94 −.08	23 9 3.5	46.09 +.02	69.8 3.4
25.0	35.97 +.09	38.8 3.6	42.50 .13	27.3 2.9	0.93 +.06	20.3 3.6	46.14 .09	66.4 3.5
34.9	36.12 +.21	35.2 −3.5	42.65 +.17	24.5 −2.8	1.06 +.20	16.7 −3.5	46.26 +.15	62.9 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		η Serpentis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 17 57	° ′ −30 25	h m 18 6	° ′ −21 5	h m 18 14	° ′ −2 55
	s	″	s	″	s	″
Jan. 0.0	57.51 +.20	31.4 +0.4	27.32 +.18	26.5 −0.1	59.03 +.15	50.7 −1.3
9.9	57.74 .24	31.0 0.3	27.52 .22	26.7 0.2	59.20 .19	51.9 1.2
19.9	58.00 .28	30.8 0.2	27.75 .25	26.9 0.2	59.40 .22	53.2 1.2
29.9	58.29 .30	30.6 0.2	28.02 .28	27.1 0.2	59.63 .24	54.3 1.1
Feb. 8.9	58.60 .33	30.4 0.1	28.30 .30	27.3 0.2	59.89 .26	55.3 0.9
18.8	58.94 .34	30.3 +0.1	28.61 .31	27.4 −0.1	60.16 .28	56.1 0.7
28.8	59.29 .35	30.3 0.0	28.93 .32	27.6 +0.1	60.45 .29	56.7 0.4
Mar. 10.8	59.64 .35	30.2 0.0	29.25 .32	27.6 0.0	60.74 .30	57.0 −0.2
20.7	59.99 .35	30.2 0.0	29.58 .33	27.5 0.1	61.04 .30	57.1 +0.1
30.7	60.34 .35	30.2 0.0	29.90 .33	27.4 0.2	60.34 .30	56.8 0.4
Apr. 9.7	60.69 .34	30.2 0.0	30.23 .32	27.1 0.3	61.64 .29	56.3 0.6
19.7	61.02 .33	30.2 0.0	30.54 .31	26.8 0.3	61.93 .28	55.6 0.8
29.6	61.34 .31	30.2 0.0	30.84 .29	26.5 0.4	62.21 .27	54.6 1.0
May 9.6	61.64 .29	30.3 −0.1	31.12 .27	26.1 0.4	62.47 .25	53.5 1.2
19.6	61.92 .26	30.4 0.2	31.39 .25	25.7 0.4	62.71 .23	52.3 1.3
29.6	62.17 .23	30.6 0.2	31.62 .22	25.4 0.3	62.93 .20	51.0 1.3
June 8.5	62.38 .19	30 9 0.3	31.83 .19	25.0 0.3	63.12 .17	49.7 1.3
18.5	62.55 .15	31.2 0.3	32.00 .15	24.8 0.2	63.28 .14	48.3 1.3
28.5	62.68 .11	31.6 0.4	32.13 .11	24.7 0.2	63.40 .10	47.1 1.2
July 8.4	62.77 .06	32.0 0.4	32.21 .06	24.4 +0.1	63.48 .06	45.9 1.1
18.4	62.81 +.01	32.5 0.4	32.26 +.02	24.4 0.0	63.52 +.02	44.8 1.0
28.4	62.79 −.03	32.9 0.4	32.26 −.02	24.3 0.0	63.52 −.02	43.9 0.9
Aug. 7.4	62.74 .08	33.3 0.4	32.21 .06	24.3 0.0	63.47 .06	43.1 0.7
17.3	62.64 .12	33.7 0.3	32.13 .10	24.4 0.0	63.39 .10	42.4 0.6
27.3	62.51 .15	34.0 0.3	32.01 .13	24.4 0.0	63.28 .13	41.9 0.4
Sept. 6.3	62.35 .17	34.2 −0.1	31.86 .16	24.5 0.0	63.14 .15	41.5 0.3
16.3	62.17 .19	34.3 0.0	31.70 .17	24.5 0.0	62.98 .16	41.3 +0.2
26.2	61.98 .19	34.3 +0.1	31.52 .17	24.4 0.0	62.81 .17	41.2 0.0
Oct. 6.2	61.79 .18	34.1 0.3	31.35 .17	24.4 +0.1	62.65 .16	41.3 −0.1
16.2	61.62 .16	33.8 0.4	31.19 .15	24.3 0.1	62.49 .15	41.5 0.3
26.1	61.47 .13	33.3 0.5	31.05 .12	24.1 0.1	62.35 .12	41.9 0.4
Nov. 5.1	61.37 .09	32.8 0.5	30.95 .09	24.0 0.1	62.24 .09	42.4 0.6
15.1	61.30 −.04	32.2 0.6	30.88 −.04	23.8 0.1	62.17 .05	43.1 0.7
25.1	61.29 +.01	31.6 0.6	30.86 .00	23.7 +0.1	62.14 −.01	43.9 0.9
Dec. 5.0	61.33 .07	31.0 0.6	30.89 +.05	23.7 0.0	62.15 +.03	44.8 1.0
15.0	61.42 .12	30.4 0.5	30.97 .10	23.6 0.0	62.20 .08	45.9 1.1
25.0	61.56 .17	29.9 0.5	31.10 .15	23.7 +0.1	62.30 .12	47.1 1.2
35.0	61.76 +.22	29.5 +0.4	31.27 +.19	23.8 −0.2	62.44 +.16	48.3 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*σ Octantis.		1 Aquilæ.		α Lyræ. (*Vega.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	18h	−89° 16′	18h 28m	−8° 19′	18h 32m	+38° 39′
	m s	″	s	″	s	″
Jan. 0.0	19 27.92 + 6.10	38.6 +3.4	33.32 +.14	46.5 −0.8	47.08 +.09	68.4 −3.1
9.9	19 35.64 9.27	35.3 3.2	33.48 .18	47.3 0.9	47.20 .14	65.3 3.1
19.9	19 46.37 12.13	32.2 2.9	33.68 .21	48.2 0.8	47.37 .19	62.3 2.9
29.9	19 59.79 14.64	29.4 2.6	33.91 .24	49.0 0.8	47.58 .23	59.5 2.6
Feb. 8.9	20 15.53 16.75	26.9 2.2	34.16 .26	49.7 0.6	47.83 .27	57.0 2.3
18.8	20 33.16 18.42	24.9 1.8	34.43 .28	50.2 0.5	48.11 .29	54.9 1.8
28.8	20 52.22 19.63	23.3 1.4	34.71 .29	50.6 0.3	48.42 .32	53.3 1.3
Mar. 10.8	21 12.26 20.37	22.2 0.9	35.01 .30	50.7 −0.1	48.74 .33	52.3 0.7
20.7	21 32.83 20.67	21.5 +0.4	35.31 .30	50.7 +0.2	49.08 .34	51.8 −0.1
30.7	21 53.49 20.57	21.4 −0.1	35.62 .31	50.4 0.4	49.43 .34	52.0 +0.4
Apr. 9.7	22 13.85 20.06	21.7 0.6	35.92 .30	49.9 0.6	49.77 .34	52.7 1.0
19.7	22 33.50 19.14	22.5 1.1	36.22 .30	49.2 0.8	50.10 .32	54.0 1.6
29.6	22 52.01 17.82	23.8 1.5	36.51 .28	48.3 0.9	50.42 .31	55.8 2.0
May 9.6	23 9.02 16.15	25.5 1.9	36.79 .27	47.4 1.0	50.71 .28	58.0 2.4
19.6	23 24.19 14.13	27.5 2.2	37.05 .25	46.3 1.1	50.98 .25	60.6 2.7
29.6	23 37.19 11.81	29.9 2.5	37.29 .22	45.2 1.1	51.21 .21	63.5 3.0
June 8.5	23 47.73 9.22	32.6 2.7	37.49 .19	44.1 1.1	51.40 .17	66.6 3.1
18.5	23 55.56 6.41	35.4 2.9	37.67 .16	43.0 1.0	51.55 .13	69.7 3.1
28.5	24 0.50 3.45	38.4 3.0	37.81 .12	42.0 1.0	51.65 .08	72.8 3.1
July 8.4	24 2.44 + 0.42	41.4 3.0	37.90 .08	41.1 0.9	51.71 +.03	75.9 3.0
18.4	24 1.34 − 2.62	44.3 2.9	37.96 +.03	40.2 0.8	51.71 −.02	78.8 2.8
28.4	23 57.21 5.59	47.2 2.7	37.97 −.01	39.5 0.6	51.66 .07	81.5 2.6
Aug. 7.4	23 50.18 8.39	49.8 2.4	37.95 .05	39.0 0.5	51.56 .12	84.0 2.3
17.3	23 40.49 10.91	52.1 2.1	37.88 .09	38.5 0.4	51.42 .16	86.1 1.9
27.3	23 28.47 13.03	54.0 1.7	37.77 .12	38.1 0.3	51.24 .20	87.9 1.6
Sept. 6.3	23 14.56 14.68	55.4 1.2	37.64 .14	37.9 0.2	51.02 .23	89.2 1.2
16.3	22 59.26 15.80	56.3 −0.6	37.49 .16	37.7 +0.1	50.79 .24	90.2 0.7
26.2	22 43.14 16.30	56.6 0.0	37.33 .17	37.7 0.0	50.54 .25	90.7 +0.3
Oct. 6.2	22 26.84 16.15	56.3 +0.6	37.16 .16	37.7 −0.1	50.28 .25	90.7 −0.2
16.2	22 11.02 15.33	55.4 1.2	37.00 .15	37.8 0.2	50.03 .24	90.3 0.7
26.2	21 56.36 13.86	53.9 1.9	36.86 .13	38.0 0.3	49.80 .22	89.4 1.1
Nov. 5.1	21 43.45 11.81	51.9 2.2	36.74 .10	38.4 0.4	49.60 .18	88.0 1.6
15.1	21 32.86 9.25	49.5 2.7	36.66 .06	38.8 0.5	49.44 .14	86.2 2.0
25.1	21 25.06 6.28	46.6 3.0	36.63 −.02	39.3 0.6	49.31 .10	84.1 2.3
Dec. 5.0	21 20.38 − 3.02	43.4 3.2	36.63 +.02	39.9 0.7	49.24 −.05	81.5 2.7
15.0	21 19.06 + 0.40	40.1 3.4	36.68 .07	40.7 0.8	49.21 .00	78.8 2.9
25.0	21 21.18 3.81	36.6 3.4	36.77 .11	41.5 0.8	49.25 +.06	75.8 3.0
35.0	21 26.64 + 7.06	33.3 +3.3	36.90 +.15	42.3 −0.8	49.33 +.11	72.7 −3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Lyræ.		σ Sagittarii.		*50 Draconis.		ζ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 18 45	° ′ +33 12	h m 18 47	° ′ −26 26	h m 18 50	° ′ +75 16	h m 18 59	° ′ +13 40
	s	″	s	″	s	″	s	″
Jan. 0.0	33.29 +.08	72.7 −2.9	41.30 +.14	53.3 +0.3	11.80 −.09	74.6 −3.4	47.21 +.10	54.8 −2.0
10.0	33.40 .13	69.8 2.9	41.46 .18	53.0 0.3	11.79 +.07	71.1 3.5	47.32 .13	52.8 2.0
19.9	33.55 .17	67.0 2.7	41.66 .22	52.6 0.3	11.94 .23	67.7 3.4	47.47 .16	50.8 1.9
29.9	33.75 .21	64.4 2.5	41.90 .25	52.3 0.3	12.25 .39	64.4 3.1	47.65 .20	49.0 1.8
Feb. 8.9	33.98 .25	62.0 2.2	42.16 .28	52.0 0.3	12.72 .53	61.4 2.8	47.86 .22	47.3 1.5
18.9	34.24 .27	60.0 1.8	42.45 .30	51.6 0.4	13.32 .65	58.8 2.3	48.10 .25	45.9 1.2
28.8	34.53 .30	58.4 1.3	42.76 .32	51.3 0.4	14.02 .75	56.8 1.8	48.36 .27	44.9 0.9
Mar. 10.8	34.83 .31	57.4 0.8	43.08 .33	50.9 0.4	14.82 .82	55.3 1.2	48.63 .28	44.2 −0.4
20.8	35.15 .32	56.9 −0.2	43.42 .33	50.4 0.5	15.67 .87	54.4 −0.5	48.92 .29	44.0 0.0
30.8	35.48 .33	57.0 +0.4	43.75 .34	50.0 0.5	16.55 .88	54.2 +0.1	49.22 .30	44.2 +0.4
Apr. 9.7	35.81 .32	57.6 0.9	44.09 .34	49.4 0.5	17.42 .87	54.6 0.8	49.52 .30	44.8 0.8
19.7	36.13 .32	58.8 1.4	44.43 .33	48.9 0.5	18.27 .82	55.7 1.4	49.82 .30	45.8 1.2
29.7	36.44 .30	60.5 1.9	44.76 .33	48.4 0.5	19.06 .75	57.3 1.9	50.11 .29	47.2 1.5
May 9.6	36.73 .28	62.5 2.3	45.08 .31	48.0 0.4	19.77 .66	59.5 2.4	50.40 .27	48.8 1.8
19.6	37.00 .25	65.0 2.6	45.39 .29	47.8 0.4	20.38 .55	62.2 2.8	50.66 .26	50.8 2.0
29.6	37.24 .22	67.7 2.8	45.66 .26	47.2 0.3	20.88 .43	65.2 3.1	50.91 .23	52.9 2.2
June 8.6	37.44 .18	70.5 2.9	45.91 .23	46.9 0.2	21.23 .29	68.4 3.4	51.13 .20	55.1 2.2
18.5	37.61 .14	73.5 3.0	46.13 .20	46.8 +0.1	21.45 +.14	71.9 3.5	51.31 .17	57.4 2.3
28.5	37.73 .10	76.5 3.0	46.30 .15	46.8 0.0	21.52 .00	75.4 3.5	51.46 .13	59.6 2.2
July 8.5	37.80 +.05	79.5 2.9	46.44 .11	46.8 −0.1	21.44 −.15	78.9 3.5	51.57 .09	61.8 2.1
18.5	37.83 .00	82.3 2.7	46.52 .06	47.0 0.2	21.22 .29	82.3 3.3	51.63 +.04	63.9 2.0
28.4	37.80 −.05	84.9 2.5	46.56 +.01	47.3 0.3	20.85 .43	85.5 3.1	51.65 .00	65.8 1.8
Aug. 7.4	37.73 .09	87.3 2.2	46.55 −.03	47.6 0.3	20.36 .56	88.5 2.8	51.63 −.04	67.5 1.6
17.4	37.62 .13	89.4 1.9	46.49 .08	47.9 0.3	19.74 .67	91.2 2.5	51.57 .08	69.0 1.4
27.4	37.47 .17	91.1 1.6	46.39 .12	48.2 0.3	19.02 .77	93.5 2.1	51.47 .11	70.3 1.1
Sept. 6.3	37.28 .20	92.5 1.2	46.26 .14	48.6 0.3	18.21 .84	95.4 1.7	51.34 .14	71.3 0.8
16.3	37.08 .22	93.5 0.8	46.10 .17	48.8 0.2	17.33 .90	96.8 1.2	51.18 .17	71.9 0.5
26.3	36.85 .23	94.1 +0.4	45.93 .18	49.0 −0.1	16.41 .94	97.7 0.7	51.01 .18	72.4 +0.3
Oct. 6.2	36.62 .23	94.2 −0.1	45.75 .18	49.1 0.0	15.46 .95	98.2 +0.2	50.83 .18	72.5 0.0
16.2	36.39 .22	93.9 0.5	45.57 .17	49.1 0.0	14.51 .94	98.1 −0.4	50.65 .17	72.3 −0.3
26.2	36.18 .20	93.2 1.0	45.41 .15	49.0 +0.1	13.59 .90	97.4 0.9	50.49 .15	71.8 0.6
Nov. 5.2	36.00 .17	92.0 1.4	45.27 .12	48.8 0.2	12.72 .83	96.3 1.4	50.35 .13	71.1 0.9
15.1	35.84 .14	90.4 1.8	45.18 .08	48.5 0.3	11.93 .75	94.5 2.0	50.23 .10	70.0 1.2
25.1	35.73 .09	88.5 2.1	45.12 −.03	48.2 0.4	11.24 .63	92.4 2.4	50.15 .06	68.7 1.4
Dec. 5.1	35.66 −.05	86.2 2.4	45.11 +.01	47.8 0.4	10.67 .50	89.8 2.8	50.11 −.02	67.2 1.6
15.0	35.64 .00	83.6 2.7	45.15 .06	47.4 0.4	10.23 .36	86.8 3.1	50.11 +.02	65.4 1.8
25.0	35.66 +.05	80.9 2.8	45.24 .11	47.0 0.4	9.95 .20	83.5 3.3	50.15 .06	63.6 1.9
35.0	35.74 +.10	78.0 −2.8	45.37 +.15	46.7 +0.4	9.84 −.03	80.1 −3.4	50.24 +.10	61.6 −2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Sagittarii.		*δ Draconis.		*τ Draconis.		δ Aquilæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 10	° ′ −19 10	h m 19 12	° ′ +67 26	h m 19 17	° ′ +73 7	h m 19 19	° ′ +2 52
	s	″	s	″	s	″	s	″
Jan. 0.0	29.09 +.11	10.0 0.0	27.52 −.07	45.2 −3.4	48.04 −.15	39.5 −3.3	20.02 +.09	17.2 −1.3
10.0	29.22 .15	10.0 0.0	27.51 +.04	41.8 3.4	47.96 −.01	36.1 3.4	20.13 .12	15.9 1.3
20.0	29.38 .18	10.0 0.0	27.60 .14	38.4 3.4	48.02 +.13	32.7 3.4	20.26 .15	14.5 1.3
29.9	29.58 .22	10.0 0.0	27.79 .24	35.0 3.2	48.22 .27	29.3 3.2	20.43 .18	13.3 1.2
Feb. 8.9	29.82 .24	10.0 −0.1	28.09 .34	31 9 2.9	48.56 .40	26.2 3.0	20.64 .21	12.3 1.0
18.9	30.07 .27	9.8 0.2	28.47 .42	29.2 2.5	49.02 .52	23.4 2.6	20.86 .24	11.4 0.8
28.9	30.35 .29	9.5 0.3	28.93 .49	26.9 2.0	49.59 .61	21.1 2.1	21.11 .26	10.7 0.5
Mar. 10.8	30.64 .30	9.2 0.4	29.46 .55	25.2 1.4	50.25 .69	19.3 1.5	21.37 .27	10.4 −0.2
20.8	30.95 .31	8.7 0.5	30.03 .59	24.1 0.8	50.97 .75	18.1 0.9	21.66 .29	10.4 +0.2
30.8	31.26 .32	8.1 0.6	30.63 .61	23.7 −0.1	51.74 .78	17.5 −0.2	21.95 .30	10.7 0.5
Apr. 9.7	31.59 .32	7.4 0.7	31.24 .61	23.9 +0.5	52.52 .78	17.6 +0.4	22.25 .30	11.4 0.8
19.7	31.91 .32	6.6 0.8	31.85 .59	24.7 1.2	53.29 .76	18.3 1.1	22.55 .30	12.3 1.1
29.7	32.23 .32	5.8 0.9	32.42 .56	26.2 1.8	54.03 .71	19.7 1.7	22.85 .30	13.6 1.3
May 9.7	32.54 .31	4.9 0.9	32.96 .51	28.2 2.3	54.72 .65	21.6 2.2	23.14 .29	15.0 1.5
19.6	32.84 .29	4.1 0.8	33.44 .45	30.7 2.7	55.33 .56	24.1 2.6	23.42 .27	16.6 1.7
29.6	33.12 .27	3.3 0.8	33.85 .37	33.6 3.1	55.84 .46	26.9 3.0	23.68 .25	18.4 1.8
June 8.6	33.38 .24	2.5 0.7	34.18 .29	36.9 3.3	56.25 .35	30.1 3.3	23.92 .22	20.2 1.8
18.6	33.60 .21	1.8 0.6	34.42 .19	40.3 3.5	56.54 .23	33.5 3.5	24.13 .19	22.0 1.8
28.5	33.79 .17	1.3 0.5	34.57 +.10	43.9 3.6	56.71 +.10	37.0 3.6	24.30 .16	23.8 1.8
July 8.5	33.94 .12	0.8 0.4	34.62 .00	47.5 3.6	56.75 −.03	40.6 3.6	24.43 .11	25.5 1.7
18.5	34.04 .08	0.5 0.3	34.57 −.10	51.0 3.5	56.66 .16	44.1 3.5	24.53 .07	27.1 1.5
28.5	34.09 +.03	0.3 −0.1	34.42 .20	54.4 3.3	56.44 .28	47.6 3.3	24.58 +.03	28.6 1.3
Aug. 7.4	34.10 −.01	0.2 0.0	34.17 .29	57.6 3.0	56.10 .40	50.8 3.1	24.58 −.01	29.8 1.2
17.4	34.07 .06	0.3 0.0	33.84 .37	60.5 2.7	55.64 .51	53.8 2.8	24.55 .06	30.9 1.0
27.4	33.99 .09	0.3 +0.1	33.44 .44	63.1 2.4	55.09 .60	56.4 2.5	24.47 .09	31.8 0.8
Sept. 6.3	33.88 .13	0.5 0.1	32.96 .50	65.2 2.0	54.45 .68	58.7 2.1	24.37 .12	32.5 0.6
16.3	33.74 .15	0.6 0.2	32.43 .55	67.0 1.5	53.73 .74	60.5 1.6	24.23 .14	33.0 0.4
26.3	33.58 .17	0.8 0.2	31.86 .58	68.2 1.0	52.96 .79	61.9 1 1	24.08 .16	33.3 +0.2
Oct. 6.3	33.41 .17	0.9 0.1	31.27 .60	69.0 +0.5	52.16 .81	62.7 0.6	23.91 .16	33.4 0.0
16.2	33.24 .16	1.1 0.1	30.67 .59	69.2 −0.1	51.35 .81	63.1 +0.1	23.75 .16	33.3 −0.2
26.2	33.08 .15	1 2 0.1	30.09 .57	68.8 0.6	50.54 .79	62.9 −0.5	23.59 .15	33.0 0.4
Nov. 5.2	32.94 .12	1.2 +0.1	29.53 .54	67.9 1.2	49.77 .75	62.1 1.0	23.45 .13	32.5 0.6
15.2	32.84 .09	1.3 0.0	29.02 .48	66.5 1.7	49.05 .68	60.8 1.6	23.34 .10	31.8 0.8
25.1	32.77 .05	1.3 0.0	28.57 .41	64.5 2.2	48.41 .60	59.0 2.1	23.26 .06	30.9 0.9
Dec. 5.1	32.74 −.01	1.3 0.0	28.20 .33	62.1 2.6	47.87 .49	56.6 2.5	23.22 −.02	29.9 1.1
15.1	32.75 +.04	1.3 0.0	27.91 .24	59.3 3.0	47.43 .37	53.9 2.9	23.22 +.02	28.7 1.2
25.0	32.81 .08	1.3 0.0	27.73 .13	56.1 3.2	47.12 .24	50.9 3.2	23.25 .06	27.5 1.3
35.0	32.91 +.12	1.4 0.0	27.64 −.03	52.8 −3.4	46.95 −.09	47.6 −3.4	23.33 +.10	26.2 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	κ Aquilæ.		γ Aquilæ.		α Aquilæ. (*Altair.*)		*ε Draconis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 30	° ′ −7 17	h m 19 40	° ′ +10 18	h m 19 44	° ′ +8 32	h m 19 48	° ′ +69 57
	s	″	s	″	s	″	s	″
Jan. 0.0	18.96 +.08	54.9 −0.7	26.77 +.06	57.6 −1.7	49.06 +.06	46.2 −1.5	30.18 −.19	25.4 −3.1
10.0	19.06 .12	55.6 0.7	26.85 .09	55.9 1.7	49.13 .09	44.6 1.6	30.05 −.07	22.1 3.3
20.0	19.20 .15	56.3 0.6	26.96 .13	54.2 1.6	49.24 .13	43.0 1.5	30.04 +.05	18.8 3.4
30.0	19.37 .18	56.9 0.6	27.11 .16	52.6 1.5	49.38 .16	41.6 1.4	30.15 .17	15.4 3.3
Feb. 8.9	19.56 .21	57.4 0.4	27.28 .19	51.2 1.3	49.56 .19	40.3 1.2	30.37 .28	12.2 3.1
18.9	19.79 .24	57.7 0.3	27.49 .22	50.0 1.1	49.76 .22	39.2 1.0	30.70 .38	9.2 2.8
28.9	20.03 .26	57.9 −0.1	27.72 .24	49.1 0.7	49.99 .24	38.3 0.7	31.14 .48	6.6 2.3
Mar. 10.9	20.30 .27	57.9 +0.2	27.97 .26	48.5 −0.4	50.24 .26	37.8 −0.3	31.66 .55	4.5 1.8
20.8	20.58 .29	57.6 0.4	28.24 .28	48.3 0.0	50.51 .28	37.7 0.0	32.25 .61	3.0 1.2
30.8	20.87 .30	57.1 0.6	28.52 .29	48.5 +0.4	50.79 .29	37.9 +0.4	32.88 .65	2.1 −0.6
Apr. 9.8	21.18 .31	56.3 0.8	28.82 .30	49.1 0.8	51.09 .30	38.5 0.8	33.55 .65	1.8 +0.1
19.7	21.48 .31	55.4 1.0	29.12 .30	50.0 1.1	51.39 .30	39.5 1.2	34.23 .67	2.2 0.7
29.7	21.79 .31	54.2 1.2	29.42 .30	51.3 1.5	51.69 .30	40.8 1.4	34.90 .65	3.2 1.3
May 9.7	22.09 .30	53 0 1.3	29.72 .29	52.9 1.7	51.99 .30	42.3 1.7	35.53 .61	4.9 1.9
19.7	22.39 .28	51.6 1.4	30.01 .28	54.7 1.9	52.28 .28	44.1 1.9	36.12 .55	7.0 2.4
29.6	22.66 .26	50.2 1.4	30.28 .26	56.8 2.1	52.56 .27	46.1 2.0	36.64 .48	9.6 2.8
June 8.6	22.91 .24	48.8 1.4	30.53 .24	58.9 2.2	52.81 .24	48.2 2.1	37.07 .39	12.6 3.2
18.6	23.14 .21	47.4 1.3	30.75 .20	61 1 2.2	53.04 .21	50.3 2.1	37.42 .30	15.9 3.4
28.6	23.33 .17	46.2 1.2	30.94 .17	63.3 2.2	53.23 .17	52.5 2.1	37.67 .19	19.4 3.6
July 8.5	23.48 .13	45.0 1.1	31.09 .13	65.4 2.1	53.39 .13	54.5 2.0	37.81 +.08	23.1 3.6
18.5	23.59 .09	43.9 1.0	31.19 .08	67.5 2.0	53.50 .09	56.5 1.9	37.84 −.03	26.7 3.6
28.5	23.66 +.05	43.0 0.8	31.26 +.04	69.4 1.8	52.57 +.05	58.4 1.7	37.76 .13	30.3 3.5
Aug. 7.4	23.68 .00	42.2 0.7	31.28 .00	71.1 1.6	53,59 .00	60.0 1.5	37.57 .24	33.8 3.4
17.4	23.66 −.04	41.6 0.5	31.25 −.04	72.6 1.4	53.58 −.04	61.5 1.3	37.28 .34	37.0 3.1
27.4	23.60 .08	41.2 0.4	31.19 .08	73.9 1.2	53.52 .08	62.7 1.1	36.89 .43	40.0 2.8
Sept., 6.4	23.50 .11	40.9 0.2	31.08 .12	74.9 0.9	53.42 .11	63.7 0.9	36.42 .50	42.6 2.4
16.3	23.38 .14	40.7 +0.1	30.95 .14	75.7 0.7	53.30 .14	64.4 0.6	35.88 .57	44.8 2.0
26.3	23.23 .15	40.6 0.0	30.80 .16	76.2 0.4	53.15 .16	64.9 0.4	35.29 .62	46.6 1.6
Oct. 6.3	23.07 .16	40.7 −0.1	30.65 .17	76.5 +0.1	52.99 .16	65.2 +0.1	34.65 .65	47.9 1.0
16.3	22.91 .16	40.8 0.2	30.47 .17	76.5 −0.1	52.82 .16	65.2 −0.1	33.99 .66	48.7 +0.5
26.2	22.75 .15	41.0 0.3	30.30 .16	76.2 0.4	52.66 .15	65.0 0.4	33.33 .66	49.0 0.0
Nov. 5.2	22.62 .13	41.4 0.4	30.15 .14	75.7 0.6	52.51 .14	64.5 0.6	32.69 .63	48.6 −0.6
15.2	22.50 .10	41.8 0.5	30.02 .11	74.9 0.9	52.39 .11	63.8 0.8	32.07 .59	47.7 1.2
25.1	22.42 .06	42.3 0.5	29.93 .08	73.9 1.1	52.29 .08	62.9 1.0	31.51 .53	46.3 1.7
Dec. 5.1	22.38 −.03	42.8 0 6	29.86 .05	72.7 1.3	52.23 .05	61.7 1.2	31.02 .45	44.4 2.2
15.1	22.37 +.01	43.5 0.6	29.83 −.01	71 3 1.5	52.20 −.01	60.4 1.4	30.61 .36	41.9 2.6
25.0	22.41 .05	44.1 0.7	29.84 +.03	69.7 1.6	52.21 +.03	59.0 1.5	30.30 .26	39.1 3.0
35.0	22.48 +.09	44.8 −0.7	29.89 +.07	68.1 −1.7	52.25 +.07	57.5 −1.5	30.11 −.14	36.0 −3.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquilæ.		τ Aquilæ.		α² Capricorni.		*κ Cephei.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	$19^{h}\ 49^{m}$	$+6^{\circ}\ 5'$	$19^{h}\ 58^{m}$	$+6^{\circ}\ 55'$	$20^{h}\ 11^{m}$	$-12^{\circ}\ 55'$	$20^{h}\ 12^{m}$	$+77^{\circ}\ 20'$
	s	″	s	″	s	″	s	″
Jan. 0.1	18.47 +.05	67.6 −1.5	10.09 +.04	62.0 −1.4	16.49 +.05	23.9 −0.3	50.73 −.46	38.3 −2.9
10.0	18.54 .09	66.1 1.4	10.15 .08	60.5 1.4	16.56 .08	24.2 0.2	50.36 .28	35.2 3.2
20.0	18.65 .12	64.7 1.4	10.24 .11	59.1 1.4	16.65 .12	24.4 0.2	50.17 −.09	31.9 3.3
30.0	18.79 .15	63.4 1.3	10.37 .15	57.7 1.3	16.79 .15	24.5 −0.1	50.17 +.10	28.6 3.3
Feb. 8.9	18.96 .18	62.2 1.1	10.53 .18	56.5 1.1	16.95 .18	24.6 0.0	50.36 .28	25.3 3.2
18.9	19.16 .21	61.2 0.9	10.73 .20	55.5 0.9	17.14 .21	24.5 +0.1	50.74 .46	22.3 2.9
28.9	19.38 .23	60.4 0.6	10.94 .23	54.8 0.6	17.36 .23	24.2 0.3	51.28 .62	19.5 2.6
Mar. 10.9	19.63 .26	60.0 −0.3	11.18 .25	54.3 −0.3	17.61 .25	23.8 0.5	51.98 .76	17.1 2.1
20.8	19.89 .27	59.9 +0.1	11.44 .27	54.2 +0.1	17.87 .27	23.1 0.7	52.80 .87	15.3 1.6
30.8	20.17 .29	60.2 0.4	11.72 .28	54.5 0.4	18.16 .29	22.3 0.9	53.72 .95	14.0 1.0
Apr. 9.8	20.47 .30	60.8 0.8	12 01 .30	55.1 0.8	18.45 .30	21.4 1.0	54.70 1.00	13.4 −0.3
19.8	20.77 .30	61.7 1.1	12.31 .20	56.0 1.1	18.76 .31	20.2 1.2	55.71 1.01	13.4 +0.3
29.7	21.07 .30	63.0 1.4	12.62 .30	57.3 1.4	19.08 .32	19.0 1.3	56.72 1.00	14.0 0.9
May 9.7	21.37 .30	64.5 1.6	12.92 .30	58.8 1.7	19.40 .32	17.6 1.4	57.70 .95	15.2 1.5
19.7	21.67 .29	66.2 1.8	13.22 .29	60.6 1.8	19.71 .31	16.3 1.4	58.61 .87	17.0 2.1
29.6	21.94 .27	68.1 1.9	13.50 .27	62.5 2.0	20.01 .29	14.9 1.4	59.43 .76	19.3 2.5
June 8.6	22.20 .24	70.1 2.0	13.76 .25	64.6 2.1	20.30 .27	13.5 1.3	60.13 .64	22.1 2.9
18.6	22.43 .21	72.1 2.0	14.00 .22	66.6 2.1	20.56 .25	12.2 1.2	60.69 .49	25.2 3.2
28.6	22.62 .18	74.1 2.0	14.20 .18	68 7 2.0	20.79 .21	11.1 1.1	61.11 .33	28.5 3.5
July 8.5	22.78 .14	76.1 1.9	14.37 .15	70.7 2.0	20.99 .17	10.1 0.9	61.36 +.17	32.1 3.6
18.5	22.90 .10	77.9 1.8	14.49 .10	72.7 1.9	21.14 .13	9.2 0.8	61.45 .00	35.7 3.6
28.5	22.98 .06	79.6 1.6	14.57 .06	74.5 1.7	21.25 .08	8.6 0.6	61.37 −.16	39.4 3.6
Aug. 7.5	23.01 +.01	81.1 1.4	14.61 +.02	76.0 1.5	21.31 +.04	8.0 0.4	61.12 .33	42.9 3.5
17.4	22.99 −.03	82.4 1.2	14.61 −.03	77.5 1.3	21.33 −.01	7.7 0.3	60.72 .48	46.4 3.3
27.4	22.94 .07	83.6 1.0	14.56 .07	78.6 1.1	21.30 .05	7.5 +0.1	60.16 .62	49.6 3.1
Sept. 6.4	22.85 .11	84.4 0.8	14.47 .10	79.6 0.8	21.23 .08	7.4 0.0	59.47 .75	52.5 2.8
16.3	22.73 .13	85.1 0.5	14.36 .13	80.3 0.6	21.13 .12	7.4 −0.1	58.67 .86	55.1 2.4
26.3	22.58 .15	85.5 0.3	14.21 .15	80.8 0.4	21.00 .14	7.6 0.2	57.76 .95	57.3 2.0
Oct. 6.3	22.42 .16	85.7 +0.1	14.06 .16	81.1 +0.1	20.85 .15	7.8 0.2	56.78 1.01	59.0 1.5
16.3	22.26 .16	85.7 −0.1	13.90 .16	81.1 −0.1	20.70 .16	8.0 0.3	55.74 1.05	60.3 1.0
26.2	22.10 .15	85.5 0.4	13.74 .16	80.9 0.3	20.54 .15	8.3 0.3	54.68 1.06	61.0 +0.4
Nov. 5.2	21.95 .14	85.0 0.6	13.59 .14	80.5 0.5	20.39 .14	8.6 0.3	53.62 1.05	61.2 −0.1
15.2	21.83 .11	84.3 0.8	13.46 .12	79.8 0.7	20.27 .11	8.9 0.3	52.59 1.01	60.7 0.7
25.2	21.73 .08	83.4 1.0	13.36 .09	79.0 0.9	20.17 .09	9.3 0.3	51.62 .93	59.8 1.3
Dec. 5.1	21.66 .05	82.4 1.1	13.29 .05	77.9 1.1	20.09 .05	9.6 0.3	50.74 .83	58.2 1.8
15.1	21.64 −.01	81.2 1.3	13.25 −.02	76.7 1.3	20.06 −.02	9.9 0.3	49.97 .71	56.2 2.5
25.1	21.64 +.02	79.8 1.4	13.25 +.02	75.4 1.4	20.06 +.02	10.2 0.3	49.33 .56	53.7 2.7
35.0	21.69 +.06	78.3 −1.6	13.29 +.06	74.0 −1.4	20.10 +.06	10 5 −0.3	48.86 −.38	50.8 −3 0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pavonis.		π Capricorni.		ε Delphini.		*Groombridge 3241.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	20h 15m	−57° 7′	20h 20m	−18° 36′	20h 27m	+10° 53′	20h 30m	+72° 6′
	s	″	s	″	s	″	s	″
Jan. 0.1	58.63 +.03	35.7 +2.2	19.69 +.04	43.5 0.0	22.32 +.02	20.8 −1.5	26.43 −.33	71.7 −2.8
10.0	58.70 .10	33.4 2.4	19.74 .07	43.4 +0.1	22.35 .05	19.3 1.5	26.16 .21	68.7 3.1
20.0	58.83 .16	31.0 2.5	19.84 .11	43.2 0.2	22.42 .08	17.7 1.5	26.01 −.08	65.5 3.3
30.0	59.02 .23	28.5 2.5	19.97 .14	43.0 0.3	22.52 .11	16.2 1.4	25.99 +.05	62.2 3.3
Feb. 9.0	59.28 .28	26.0 2.5	20.13 .18	42.6 0.4	22.65 .15	14.8 1.3	26.10 .18	58.9 3.2
18.9	59.59 .34	23.6 2.4	20.32 .20	42.2 0.5	22.81 .18	13.7 1.1	26.35 .31	55.8 3.0
28.9	59.95 .38	21.2 2.3	20.54 .23	41.6 0.7	23.00 .20	12.7 0.8	26.71 .42	52.9 2.7
Mar. 10.9	60.36 .42	19.0 2.1	20.78 .25	40.8 0.8	23.22 .23	12.1 0.4	27.19 .53	50.4 2.2
20.9	60.80 .46	17.0 1.9	21.04 .28	39.9 0.9	23.46 .25	11.9 −0.1	27.76 .61	48.4 1.7
30.8	61.28 .49	15.2 1.7	21.33 .30	38.9 1.1	23.73 .27	12.0 +0.3	28.42 .68	47.0 1.1
Apr. 9.8	61.78 .51	13.6 1.4	21.63 .31	37.8 1.2	24.01 .29	12.5 0.7	29.12 .73	46.2 −0.5
19.8	62.29 .52	12.4 1.1	21.95 .32	36.6 1.2	24.31 .30	13.4 1.1	29.86 .75	46.1 +0.1
29.7	62.82 .53	11.4 0.8	22.28 .33	35.3 1.3	24.61 .31	14.6 1.4	30.61 .75	46.6 0.8
May 9.7	63.35 .52	10.7 0.5	22.60 .33	34.0 1.3	24.92 .31	16.1 1.7	31.35 .73	47.6 1.4
19.7	63.87 .51	10.4 +0.1	22.93 .32	32.7 1.3	25.23 .30	17.9 1.9	32.06 .68	49.3 1.9
29.7	64.37 .48	10.5 −0.2	23.24 .31	31.5 1.2	25.52 .29	20.0 2.1	32.71 .61	51.5 2.4
June 8.6	64.83 .45	10.9 0.6	23.54 .29	30.3 1.1	25.80 .27	22.2 2.2	33.28 .53	54.2 2.9
18.6	65.26 .40	11.6 0.9	23.82 .26	29.2 1.0	26.06 .24	24.4 2.3	33.76 .43	57.2 3.2
28.6	65.64 .34	12.6 1.2	24.06 .23	28.3 0.8	26.28 .21	26.7 2.3	34.15 .33	60.6 3.4
July 8.6	65.95 .28	14.0 1.5	24.27 .19	27.6 0.6	26.47 .17	29.0 2.2	34.42 .21	64.1 3.6
18.5	66.19 .20	15.6 1.7	24.44 .14	27.1 0.5	26.62 .13	31.2 2.1	34.57 +.09	67.8 3.7
28.5	66.36 .13	17.3 1.8	24.56 .10	26.7 0.3	26.73 .08	33.2 2.0	34.61 −.03	71.5 3.7
Aug. 7.5	66.45 +.05	19.2 1.9	24.63 +.05	26.5 +0.1	26.79 +.04	35.1 1.8	34.51 .15	75.1 3.6
17.4	66.46 −.03	21.2 1.9	24.66 .00	26.4 0.0	26.81 .00	36.8 1.6	34.31 .26	78.7 3.5
27.4	66.39 .10	23.1 1.9	24.64 −.04	26.5 −0.2	26.78 −.05	38.3 1.3	33.99 .37	82.0 3.2
Sept. 6.4	66.25 .17	24.9 1.7	24.58 .08	26.7 0.3	26.72 .08	39.5 1.1	33.57 .47	85.1 2.9
16.4	66.05 .23	26.6 1.5	24.48 .11	27.0 0.3	26.62 .11	40.5 0.8	33.06 .55	87.9 2.6
26.3	65.79 .27	27.9 1.2	24.35 .14	27.4 0.4	26.49 .14	41.2 0.6	32.47 .62	90.3 2.2
Oct. 6.3	65.50 .30	29.0 0.9	24.21 .15	27.7 0.4	26.35 .15	41.7 0.3	31.82 .67	92.2 1.7
16.3	65.19 .32	29.7 0.5	24.05 .16	28.1 0.3	26.19 .16	41.9 +0.1	31.13 .71	93.7 1.2
26.3	64.87 .31	30.0 −0.1	23.89 .16	28.4 0.3	26.03 .16	41.8 −0.2	30.41 .72	94.6 0.6
Nov. 5.2	64.57 .29	29.8 +0.3	23.74 .14	28.7 0.3	25.87 .15	41.5 0.4	29.69 .72	94.9 +0.1
15.2	64.29 .26	29.3 0.8	23.60 .12	29.0 0.2	25.74 .13	40.9 0.7	28.98 .69	94.7 −0.5
25.2	64.05 .21	28.3 1.2	23.49 .09	29.2 0.2	25.62 .11	40.1 0.9	28.31 .65	93.9 1.1
Dec. 5.1	63.87 .15	26.9 1.5	23.42 .06	29.3 −0.1	25.53 .08	39.1 1.1	27.69 .58	92.5 1.6
15.1	63.75 .09	25.2 1.9	23.37 −.03	29.4 0.0	25.47 .04	37.8 1.3	27.15 .50	90.6 2.1
25.1	63.69 −.02	23.2 2.1	23.37 +.01	29.4 0.0	25.44 −.01	36.4 1.4	26.70 .40	88.3 2.6
35.1	63.71 +.05	21.0 +2.3	23.40 +.05	29.3 +0.1	25.45 +.02	34.9 −1.5	26.35 −.29	85.5 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		ν Cygni.		*12 Year Cat. 1879.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 37	° ′ +44 50	h m 20 46	° ′ −9 26	h m 20 52	° ′ +40 41	h m 20 52	° ′ +80 5
	s	″	s	″	s	″	s	″
Jan. 0.1	14.83 −.06	45.6 −2.6	3.84 +.01	28.0 −0.4	36.17 −.07	59.0 −2.4	55.13− .78	45.3 −2.5
10.1	14.78 −.02	42.8 2.8	3.87 .05	28.4 0.4	36.13 −.03	56.5 2.6	54.45 .58	42.6 2.9
20.0	14.79 +.03	40.0 2.9	3.93 .08	28.7 0.3	36.12 +.02	53.8 2.7	53.97 .36	39.6 3.1
30.0	14.84 .08	37.1 2.9	4.03 .11	29.0 0.2	36.17 .07	51.0 2.7	53.74− .12	36.4 3.2
Feb. 9.0	14.95 .13	34.3 2.8	4.15 .14	29.1 −0.1	36.25 .11	48 3 2.6	53.74+ .13	33.1 3.2
19.0	15.10 .18	31.6 2.5	4.31 .17	29.1 +0.1	36.39 .16	45.8 2.4	53.99 .36	29.9 3.1
28.9	15.31 .23	29.2 2.2	4.49 .20	28.9 0.3	36.57 .20	43.5 2.1	54.47 .59	26.9 2.8
Mar. 10.9	15.56 .27	27.3 1.7	4.70 .22	28.5 0.5	36.79 .24	41.6 1.7	55.16 .79	24.2 2.5
20.9	15.84 .30	25.8 1.2	4.94 .25	27.9 0.7	37.05 .28	40.2 1.2	56.05 .97	22.0 2.0
30.8	16.16 .33	24.8 0.6	5.20 .27	27.1 0.9	37.34 .31	39.2 0.7	57.09 1.11	20.2 1.5
Apr. 9.8	16.51 .36	24.5 −0.1	5.48 .29	26.0 1.1	37.67 .34	38.9 −0.1	58.25 1.20	19.0 0.9
19.8	16.88 .37	24.7 +0.5	5.78 .30	24.8 1.3	38.02 .35	39.0 +0.4	59.49 1.26	18.5 −0.3
29.8	17.26 .38	25.5 1.1	6.09 .31	23.4 1.4	38.37 .36	39.7 1.0	60.77 1.28	18.5 +0.4
May 9.7	17.64 .38	26.8 1.6	6.40 .32	21.9 1.5	38.74 .36	41.0 1.5	62.04 1.25	19.2 1.0
19.7	18.01 .36	28.7 2.1	6.72 .31	20.3 1.6	39.10 .36	42.8 2.0	63.26 1.18	20.5 1.6
29.7	18.36 .34	31.0 2.5	7.03 .31	18.7 1.6	39.45 .34	45.0 2.4	64.39 1.08	22.4 2.1
June 8.7	18.69 .31	33.7 2.9	7.33 .29	17.1 1.6	39.78 .32	47.6 2.8	65.41 0.95	24.7 2.5
18.6	18.99 .27	36.7 3.1	7.61 .26	15.5 1.5	40.08 .28	50.5 3.0	66.28 .79	27.4 2.9
28.6	19.24 .23	40.0 3.3	7.86 .23	14.1 1.4	40.34 .24	53.6 3.2	66.98 .61	30.5 3.3
July 8.6	19.44 .18	43.3 3.4	8.08 .20	12.7 1.2	40.56 .19	56.9 3.3	67.49 .41	33.9 3.5
18.5	19.59 .12	46.7 3.4	8.26 .16	11.6 1.1	40.73 .14	60.2 3.3	67.80+ .21	37.5 3.6
28.5	19.69 .06	50.1 3.4	8.40 .12	10.6 0.9	40.84 .09	63.5 3.3	67.90− .01	41.2 3.7
Aug. 7.5	19.72 +.01	53.5 3.2	8.49 .07	9.8 0.7	40.91 +.03	66.7 3.1	67.79 .21	44.9 3.7
17.5	19.70 −.05	56.6 3.0	8.54 +.02	9.2 0.5	40.91 −.02	69.8 3.0	67.49 .41	48.5 3.6
27.4	19.63 .10	59.5 2.8	8.54 −.02	8.8 0.3	40.87 .07	72.6 2.7	66.98 .60	52.0 3.4
Sept. 6.4	19.50 .15	62.1 2.5	8.50 .06	8.5 +0.2	40.78 .11	75.3 2.4	66.29 .77	55.4 3.2
16.4	19.33 .19	64.4 2.1	8.42 .09	8.4 0.0	40.64 .15	77.5 2.1	65.43 .93	58.4 2.9
26.4	19.13 .22	66.4 1.7	8.32 .12	8.5 −0.1	40.47 .19	79.5 1.7	64.43 1.07	61.1 2.5
Oct. 6.3	18.90 .24	67.9 1.3	8.19 .14	8.6 0.2	40.27 .21	81.0 1.3	63.30 1.18	63.5 2.1
16.3	18.65 .25	68.9 0.8	8.05 .15	8.9 0.3	40.05 .22	82.1 0.9	62.08 1.26	65.3 1.6
26.3	18.39 .26	69.5 +0.3	7.90 .15	9.2 0.3	39.83 .23	82.8 +0.4	60.78 1.31	66.7 1.1
Nov. 5.3	18.13 .25	69.5 −0.2	7.75 .14	9.6 0.4	39.60 .23	82.9 −0.1	59.46 1.33	67.6 +0.5
15.2	17.89 .24	69.1 0.7	7.62 .12	9.9 0.4	39.38 .21	82.6 0.6	58.12 1.32	67.8 0.0
25.2	17.66 .21	68.1 1.2	7.51 .10	10.4 0.4	39.17 .19	81.8 1.0	56.82 1.27	67.5 −0.6
Dec. 5.2	17.46 .18	66.7 1.6	7.42 .07	10.9 0.5	38.99 .17	80.6 1.5	55.60 1.18	66.6 1.2
15.1	17.30 .14	64.8 2.1	7.36 .04	11.3 0.5	38.84 .13	78.9 1.9	54.48 1.06	65.1 1.7
25.1	17.18 .10	62.6 2.4	7.33 −.01	11.8 0.4	38.73 .10	76.8 2.2	53.49 .90	63.1 2.2
35.1	17.11 −.05	60.0 −2.7	7.34 +.02	12.2 −0.4	38.65 −.06	74.5 −2.5	52.69− .70	60.7 −2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61 Cygni (*pr.*)		ζ Cygni.		α Cephei.		1 Pegasi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$21^{h}\ 1^{m}$	$+38^{\circ}\ 8'$	$21^{h}\ 7^{m}$	$+29^{\circ}\ 43'$	$21^{h}\ 15^{m}$	$+62^{\circ}\ 3'$	$21^{h}\ 16^{m}$	$+19^{\circ}\ 16'$
	s	″	s	″	s	″	s	″
Jan. 0.1	24.61 −.06	66.0 −2.2	43.71 −.05	41.9 −2.0	37.40 −.23	76.2 −2.4	26.06 −.04	63.2 −1.6
10.1	24.57 −.02	63.7 2.4	43.68 −.01	39.8 2.2	37.20 .17	73.6 2.8	26.04 −.01	61.5 1.7
20.1	24.58 +.02	61.2 2.5	43.68 +.02	37.5 2.3	37.06 .10	70.6 3.0	26.05 +.03	59.7 1.8
30.0	24.62 .07	58.7 2.5	43.72 .06	35.2 2.3	37.01 −.02	67.5 3.1	26.10 .06	57.9 1.8
Feb. 9.0	24.71 .11	56.2 2.4	43.80 .10	33.0 2.2	37.03 +.06	64.4 3.2	26.17 .09	56.2 1.7
19.0	24.84 .15	53.8 2.2	43.92 .14	30.9 2.0	37.14 .15	61.3 3.0	26.28 .13	54.6 1.5
28.9	25.02 .20	51.7 1.9	44.07 .17	29.0 1.7	37.32 .23	58.4 2.8	26.43 .16	53.2 1.2
Mar. 10.9	25.24 .24	50.0 1.5	44.27 .21	27.5 1.3	37.59 .30	55.7 2.4	26.61 .19	52.2 0.9
20.9	25.50 .27	48.7 1.1	44.49 .24	26.4 0.9	37.93 .37	53.6 1.9	26.82 .22	51.5 0.5
30.9	25.79 .30	47.8 −0.5	44.75 .27	25.7 −0.4	38.33 .43	51.9 1.4	27.06 .25	51.2 −0.1
Apr. 9.8	26.11 .33	47.5 0.0	45.04 .30	25.5 +0.1	38.78 .48	50.7 0.8	27.33 .28	51.4 +0.3
19.8	26.45 .35	47.8 +0.5	45.35 .32	25.9 0.6	39.28 .51	50.2 −0.2	27.61 .30	51.9 0.8
29.8	26.81 .36	48.6 1.0	45.67 .33	26.7 1.1	39.80 .53	50.3 +0.4	27.92 .31	52.9 1.2
May 9.8	27.17 .37	49.9 1.6	46.00 .33	28.0 1.5	40.33 .53	51.0 1.0	28.24 .32	54.3 1.6
19.7	27.54 .36	51.7 2.0	46.34 .33	29.7 1.9	40.86 .52	52.3 1.6	28.56 .32	56.1 1.9
29.7	27.90 .35	54.0 2.4	46.67 .32	31.8 2 3	41.37 .49	54.2 2.1	28.88 .31	58.1 2.2
June 8.7	28.23 .32	56.6 2.8	46.98 .30	34.3 2.5	41.84 .46	56.5 2.6	29.18 .30	60.4 2.4
18.6	28.54 .29	59.5 3.0	47.28 .28	36.9 2.8	42.28 .41	59.3 3.0	29.47 .28	62.8 2.5
28.6	28.82 .26	62.6 3.2	47.54 .24	39.8 2.9	42.65 .35	62.4 3.3	29.74 .25	65.4 2.6
July 8.6	29.06 .21	65.9 3.3	47.76 .21	42.7 3.0	42.96 .27	65.9 3.5	29.97 .21	68.0 2.6
18.6	29.24 .16	69.2 3.3	47.95 .16	45.7 3.0	43.20 .20	69.4 3.6	30.16 .17	70.7 2.6
28.5	29.38 .11	72.6 3.3	48.09 .11	48.7 2.9	43.36 .12	73.1 3.7	30.31 .13	73.2 2.5
Aug. 7.5	29.47 .06	75.8 3.2	48.18 .07	51.5 2.8	43.44 +.04	76.8 3.7	30.41 .08	75.6 2.3
17.5	29.51 +.01	78.9 3.0	48.22 +.02	54.2 2.6	43.44 −.04	80.5 3.6	30.47 +.04	77.9 2.1
27.5	29.49 −.04	81.8 2.8	48.21 −.03	56.7 2.4	43.35 .12	84.0 3.4	30.49 −.01	79.9 1.9
Sept. 6.4	29.42 .09	84.5 2.5	48.16 .07	59.0 2.1	43.20 .19	87.3 3.2	30.46 .05	81.7 1.7
16.4	29.32 .13	86.8 2.2	48.07 .11	61.0 1.8	42.98 .25	90.4 2.9	30.39 .08	83.3 1.4
26.4	29.17 .16	88.8 1.8	47.95 .14	62.6 1.5	42.69 .31	93.1 2.5	30.29 .11	84.5 1.1
Oct. 6.3	29.00 .18	90.4 1.4	47.80 .16	63.9 1.1	42.36 .35	95.4 2.1	30.17 .13	85.5 0.8
16.3	28.81 .20	91.6 1.0	47.63 .18	64.8 0.7	41.98 .39	97.3 1.6	30.03 .15	86.2 0.5
26.3	28.60 .20	92.4 0.5	47.45 .18	65.4 +0.3	41.58 .41	98.7 1.1	29.87 .16	86.5 +0.2
Nov. 5.3	28.40 .20	92.7 +0.1	47.26 .18	65.5 −0.1	41.17 .41	99.5 +0.6	29.72 .15	86.5 −0.1
15.2	28.20 .19	92.5 −0.4	47.09 .17	65.2 0.5	40.75 .41	99.8 0.0	29.57 .15	86.2 0.5
25.2	28.02 .17	91.9 0.8	46.92 .15	64.5 0.9	40.35 .40	99.5 −0.6	29.43 .13	85.6 0.8
Dec. 5.2	27.85 .15	90.9 1.3	46.78 .13	63.5 1.2	39.96 .37	98.7 1.1	29.30 .11	84.6 1.1
15.2	27.72 .12	89.4 1.7	46.66 .10	62.1 1.6	39.62 .33	97.3 1.7	29.21 .09	83.5 1.3
25.1	27.62 .08	87.5 2.0	46.57 .07	60.3 1.9	39.32 .27	95.3 2.2	29.13 .06	82.0 1.5
35.1	27.55 −.05	85.4 −2.2	46.52 −.03	58.3 −2.1	39.07 −.22	93.0 −2.6	29.09 −.03	80.4 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		*β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 21 25	° ′ −6 6	h m 21 27	° ′ +70 1	h m 21 31	° ′ −8 23	h m 21 38	° ′ +9 18
	s	″	s	″	s	″	s	″
Jan. 0.1	7.81 −.02	27.8 −0.5	0.97 −.40	41.1 −2.3	15.06 −.03	65.0 −0.4	11.23 −.04	60.2 −1.2
10.1	7.81 +.01	28.3 0.5	0.62 .31	38.6 2.7	15.05 .00	65.4 0.4	11.20 −.01	59.0 1.2
20.1	7.83 .04	28.8 0.4	0.36 .20	35.8 3.0	15.07 +.03	65.8 0.3	11.20 +.02	57.8 1.2
30.0	7.88 .07	29.1 0.3	0.21 −.10	32.7 3.2	15.12 .06	66.0 −0.2	11.23 .05	56.6 1.2
Feb. 9.0	7.97 .10	29.4 −0.2	0.17 +.02	29.5 3.2	15.19 .09	66.1 0.0	11.30 .08	55.4 1.1
19.0	8.08 .13	29.5 0.0	0.25 .14	26.3 3.1	15.30 .12	66.0 +0.1	11.39 .11	54.4 0.9
Mar. 1.0	8.22 .16	29.4 +0.2	0.45 .25	23.2 2.9	15.44 .15	65.8 0.3	11.52 .14	53.7 0.7
10.9	8.40 .19	29.1 0.4	0.75 .36	20.4 2.6	15.61 .18	65.3 0.6	11.67 .17	53.1 0.4
20.9	8.60 .22	28.5 0.7	1.16 .46	18.0 2.2	15.81 .21	64.6 0.8	11.86 .20	52.9 −0.1
30.9	8.83 .24	27.7 0.9	1.66 .54	16.0 1.7	16.04 .24	63.7 1.0	12.08 .23	53.0 +0.3
Apr. 9.9	9.09 .27	26.7 1.1	2.24 .61	14.6 1.1	16.29 .27	62.6 1.2	12.32 .26	53.5 0.6
19.8	9.36 .29	25.4 1.4	2.88 .66	13.8 −0.5	16.57 .29	61.2 1.4	12.60 .28	54.3 1.0
29.8	9.66 .30	23.9 1.5	3.55 .69	13.6 +0.1	16.87 .30	59.7 1.6	12.89 .30	55.4 1.3
May 9.8	9.97 .31	22.3 1.7	3.25 .69	14.0 0.7	17.18 .31	58.1 1.7	13.19 .31	56.9 1.6
19.7	10.29 .32	20.6 1.8	4.94 .68	15.1 1.3	17.49 .32	56.3 1.8	13.51 .32	58.6 1.8
29.7	10.61 .31	18.8 1.8	5.61 .65	16.7 1.9	17.81 .32	54.5 1.8	13.83 .31	60.5 2.0
June 8.7	10.92 .30	16.9 1.8	6.23 .60	18.8 2.4	18.13 .31	52.7 1.8	14.14 .30	62.7 2.2
18.7	11.21 .28	15.1 1.8	6.80 .53	21.4 2.8	18.43 .29	51.0 1.7	14.43 .29	64.9 2.2
28.6	11.49 .26	13.4 1.7	7.29 .45	24.4 3.2	18.71 .27	49.3 1.6	14.71 .26	67.2 2.3
July 8.6	11.73 .23	11.8 1.5	7.70 .36	27.7 3.4	18.96 .23	47.8 1.4	14.95 .23	69.4 2.3
18.6	11.94 .19	10.3 1.4	8.01 .26	31.3 3.6	19.18 .20	46.4 1.3	15.17 .19	71.7 2.2
28.5	12.11 .15	9.0 1.2	8.22 .16	35.0 3.7	19.36 .16	45.2 1.1	15.34 .15	73.8 2.0
Aug. 7.5	12.24 .11	8.0 1.0	8.32 +.05	38.7 3.8	19.49 .11	44.3 0.8	15.47 .11	75.7 1.9
17.5	12.32 .06	7.1 0.8	8.31 −.06	42.5 3.7	19.58 .07	43.5 0.6	15.56 .07	77.5 1.7
27.5	12.36 +.02	6.4 0.6	8.21 .16	46.2 3.6	19.62 +.02	43.0 0.4	15.61 +.02	79.1 1.5
Sept. 6.4	12.36 −.02	6.0 0.4	8.00 .26	49.7 3.4	19.62 −.02	42.7 0.2	15.61 −.02	80.4 1.2
16.4	12.31 .06	5.7 +0.2	7.69 .35	53.0 3.1	19.59 .05	42.5 +0.1	15.57 .05	81.5 1.0
26.4	12.23 .09	5.6 0.0	7.30 .42	55.9 2.8	19.51 .09	42.6 −0.1	15.50 .09	82.4 0.7
Oct. 6.4	12.13 .11	5.7 −0.1	6.85 .49	58.5 2.4	19.41 .11	42.7 0.2	15.40 .11	83.0 0.5
16.3	12.01 .13	5.9 0.2	6.33 .54	60.7 2.0	19.29 .13	43.0 0.3	15.28 .13	83.4 +0.3
26.3	11.87 .14	6.2 0.3	5.77 .58	62.4 1.4	19.16 .13	43.3 0.4	15.15 .14	83.5 0.0
Nov. 5.3	11.73 .14	6.5 0.4	5.18 .60	63.6 0.9	19.02 .13	43.8 0.4	15.01 .14	83.4 −0.2
15.2	11.60 .13	7.0 0.5	4.58 .60	64.2 +0.3	18.89 .13	44.2 0.5	14.87 .13	83.1 0.4
25.2	11.48 .11	7.5 0.5	3.98 .59	64.2 −0.3	18.77 .11	44.7 0.5	14.75 .12	82.5 0.6
Dec. 5.2	11.38 .09	8.0 0.5	3.41 .55	63.6 0.9	18.67 .09	45.2 0.5	14.63 .10	81.8 0.8
15.2	11.30 .07	8.6 0.5	2.88 .51	62.4 1.4	18.58 .07	45.7 0.5	14.54 .08	80.9 1.0
25.1	11.24 .04	9.1 0.5	2.40 .44	60.7 2.0	18.52 .04	46.2 0.5	14.47 .06	79.9 1.1
35.1	11.22 −.01	9.7 −0.6	2.00 −.36	58.5 −2.4	18.49 −.01	46.7 −0.4	14.42 −.04	78.7 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*11 Cephei.		μ Capricorni.		*79 Draconis.		α Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 21 40	° ′ +70 44	h m 21 46	° ′ -14 7	h m 21 51	° ′ +73 7	h m 21 59	° ′ -0 54
	s	″	s	″	s	″	s	″
Jan. 0.1	4.00 -.44	71.2 -2.1	38.42 -.03	34.3 -0.2	16.60 -.53	44.0 -2.0	30.80 -.05	43.6 -0.7
10.1	3.61 .35	68.8 2.5	38.40 -.01	34.4 -0.1	16.11 .44	41.8 2.4	30.77 -.02	44.4 0.7
20.1	3.31 .25	66.1 2.9	38.41 +.02	34.4 +0.1	15.72 .33	39.2 2.8	30.76 .00	45.0 0.6
30.1	3.11 .14	63.1 3.1	38.45 .05	34.2 0.2	15.46 .20	36.3 3.0	30.78 +.03	45.6 0.5
Feb. 9.0	3.04 -.02	60.0 3.2	38.51 .08	33.9 0.4	15.32 -.07	33.2 3.2	30.82 .06	46.1 0.4
19.0	3.08 +.10	56.8 3.1	38.60 .11	33.5 0.5	15.32 +.07	30.0 3.2	30.90 .09	46.5 -0.3
Mar. 1.0	3.24 .22	53.7 3.0	38.73 .14	32.9 0.7	15.46 .21	26.8 3.1	31.00 .12	46.6 0.0
10.9	3.53 .34	50.8 2.7	38.89 .17	32.0 0.9	15.74 .34	23.9 2.8	31.14 .15	46.6 +0.2
20.9	3.92 .44	48.3 2.3	39.08 .20	31.0 1.1	16.14 .47	21.3 2.4	31.31 .18	46.2 0.4
30.9	4.41 .54	46.2 1.8	39.30 .23	29.8 1.3	16.67 .58	19.1 2.0	31.51 .22	45.6 0.7
Apr. 9.9	4.99 .61	44.6 1.3	39.54 .26	28.4 1.5	17.29 .67	17.3 1.4	31.74 .25	44.8 1.0
19.8	5.63 .67	43.7 0.7	39.82 .29	26.8 1.6	18.00 .74	16.2 0.9	32.00 .27	43.6 1.3
29.8	6.32 .71	43.3 -0.1	40.11 .30	25.2 1.7	18.76 .78	15.6 -0.2	32.28 .29	42.2 1.6
May 9.8	7.04 .72	43.5 +0.6	40.43 .32	23.4 1.8	19.56 .80	15.7 +0.4	32.58 .31	40.6 1.7
19.8	7.76 .71	44.4 1.2	40.75 .33	21.6 1.8	20.36 .80	16.3 1.0	32.90 .32	38.8 1.9
29.7	8.46 .69	45.9 1.7	41.08 .33	19.8 1.8	21.15 .78	17.6 1.6	33.21 .32	36.9 2.0
June 8.7	9.12 .64	47.8 2.2	41.40 .32	18.1 1.7	21.91 .73	19.5 2.1	33.53 .31	34.9 2.0
18.7	9.73 .57	50.3 2.7	41.72 .30	16.4 1.6	22.61 .66	21.8 2.5	33.84 .30	32.9 2.0
28.6	10.27 .49	53.2 3.1	42.01 .28	14.9 1.4	23.23 .58	24.5 2.9	34.13 .28	30.9 2.0
July 8.6	10.72 .40	56.4 3.4	42.28 .25	13.6 1.2	23.75 .48	27.6 3.3	34.39 .25	29.0 1.8
18.6	11.07 .30	59.9 3.6	42.51 .22	12.4 1.0	24.18 .37	31.1 3.5	34.62 .21	27.2 1.7
28.6	11.33 .20	63.6 3.7	42.71 .17	11.5 0.8	24.49 .25	34.7 3.7	34.82 .18	25.6 1.5
Aug. 7.5	11.47 +.09	67.4 3.8	42.86 .13	10.9 0.5	24.67 +.13	38.4 3.8	34.98 .13	24.1 1.3
17.5	11.50 -.02	71.1 3.8	42.97 .08	10.4 0.3	24.74 .00	42.2 3.8	35.09 .09	22.9 1.1
27.5	11.43 .13	74.9 3.7	43.03 +.04	10.2 +0.1	24.68 -.11	46.0 3.7	35.16 .05	21.9 0.9
Sept. 6.5	11.25 .23	78.5 3.5	43.05 .00	10.2 -0.1	24.51 .23	49.7 3.6	35.18 +.01	21.1 0.7
16.4	10.97 .32	81.9 3.3	43.02 -.04	10.4 0.2	24.22 .34	53.2 3.4	35.17 -.03	20.5 0.5
26.4	10.61 .41	85.0 2.9	42.96 .08	10.7 0.4	23.84 .43	56.4 3.1	35.12 .06	20.2 0.3
Oct. 6.4	10.16 .48	87.7 2.6	42.87 .10	11.1 0.5	23.36 .52	59.3 2.7	35.04 .09	20.0 +0.1
16.3	9.65 .54	90.1 2.1	42.76 .12	11.6 0.5	22.80 .59	61.9 2.3	34.94 .11	20.0 -0.1
26.3	9.09 .58	92.0 1.6	42.63 .13	12.2 0.5	22.18 .65	63.9 1.8	34.82 .12	20.2 0.2
Nov. 5.3	8.50 .61	93.3 1.1	42.50 .13	12.7 0.5	21.51 .68	65.5 1.3	34.69 .13	20.4 0.3
15.3	7.89 .62	94.1 +0.5	42.36 .13	13.2 0.5	20.81 .70	66.5 0.7	34.57 .12	20.9 0.4
25.2	7.27 .61	94.4 -0.1	42.24 .12	13.7 0.5	20.10 .70	67.0 +0.1	34.45 .12	21.4 0.6
Dec. 5.2	6.67 .58	94.0 0.7	42.13 .10	14.2 0.4	19.41 .68	66.8 -0.5	34.34 .10	22.0 0.6
15.2	6.11 .54	93.0 1.2	42.03 .08	14.5 0.3	18.74 .64	66.0 1.1	34.24 .08	22.7 0.7
25.2	5.59 .48	91.5 1.8	41.97 .06	14.8 0.2	18.13 .58	64.6 1.6	34.17 .06	23.4 0.7
35.1	5.15 -.40	89.4 -2.3	41.92 -.03	15.0 -0.1	17.59 -.50	62.7 -2.1	34.12 -.04	24.1 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 0	° ′ −47 32	h m 22 10	° ′ −8 23	h m 22 19	° ′ +0 45	h m 22 29	° ′ −0 44
	s	″	s	″	s	″	s	″
Jan. 0.2	32.19 −.10	74.9 +1.4	23.58 −.06	27.1 −0.4	2.61 −.06	32.0 −0.8	5.10 −.06	44.8 −0.7
10.1	32.11 .06	73.4 1.6	23.54 −.03	27.5 0.3	2.56 .04	31.2 0.7	5.04 .04	45.5 0.7
20.1	32.07 −.01	71.6 1.9	23.53 .00	27.9 0.2	2.54 −.01	30.5 0.7	5.01 −.02	46.1 0.6
30.1	32.08 +.03	69.6 2.2	23.54 +.02	27.9 −0.1	2.54 +.01	29.9 0.6	5.00 .00	46.7 0.5
Feb. 9.0	32.13 .07	67.3 2.4	23.58 .05	28.0 0.0	2.56 .04	29.3 0.5	5.02 +.03	47.1 0.4
19.0	32.23 .12	64.9 2.5	23.64 .08	27.8 +0.2	2.62 .07	28.9 0.3	5.06 .06	47.4 −0.2
Mar. 1.0	32.38 .17	62.3 2.6	23.74 .11	27.5 0.4	2.70 .10	28.7 −0.1	5.14 .09	47.6 0.0
11.0	32.56 .21	59.7 2.6	23.87 .15	27.0 0.6	2.82 .13	28.7 +0.1	5.25 .13	47.5 +0.2
20.9	32.80 .25	57.0 2.6	24.04 .18	26.2 0.9	2.98 .17	28.9 0.4	5.39 .16	47.1 0.5
30.9	33.07 .30	54.4 2.6	24.23 .21	25.2 1.1	3.16 .20	29.4 0.7	5.57 .19	46.5 0.7
Apr. 9.9	33.39 .33	51.9 2.5	24.46 .24	24.0 1.3	3.38 .23	30.2 0.9	5.78 .22	45.6 1.0
19.9	33.74 .37	49.5 2.3	24.71 .27	22.6 1.5	3.62 .26	31.3 1.2	6.01 .25	44.5 1.3
29.8	34.12 .39	47.2 2.1	24.99 .29	21.0 1.7	3.89 .28	32.7 1.5	6.28 .28	43.1 1.5
May 9.8	34.53 .42	45.2 1.9	25.29 .31	19.2 1.8	4.19 .30	34.3 1.7	6.57 .30	41.5 1.7
19.8	34.95 .43	43.5 1.6	25.60 .32	17.3 1.9	4.50 .31	36.0 1.9	6.88 .31	39.7 1.9
29.7	35.39 .43	42.0 1.3	25.93 .32	15.4 1.9	4.81 .32	38.0 2.0	7.20 .32	37.7 2.0
June 8.7	35.82 .43	40.9 0.9	26.25 .32	13.5 1.9	5.13 .32	40.0 2.1	7.52 .32	35.7 2.0
18.7	36.24 .41	40.2 0.5	26.56 .31	11.6 1.8	5.45 .31	42.1 2.1	7.83 .31	33.7 2.1
28.7	36.64 .38	39.9 +0.1	26.86 .29	9.8 1.7	5.74 .29	44.1 2.0	8.13 .29	31.6 2.0
July 8.6	37.00 .35	39.9 −0.2	27.14 .26	8.2 1.6	6.02 .26	46.1 1.9	8.42 .27	29.7 1.9
18.6	37.33 .30	40.4 0.6	27.38 .23	6.7 1.4	6.26 .23	48.0 1.8	8.67 .24	27.8 1.8
28.6	37.60 .25	41.2 1.0	27.59 .19	5.4 1.2	6.47 .19	49.8 1.7	8.89 .20	26.1 1.6
Aug. 7.5	37.82 .19	42.3 1.3	27.76 .15	4.4 0.9	6.65 .15	51.4 1.5	9.07 .16	24.6 1.4
17.5	37.97 .12	43.7 1.5	27.89 .10	3.6 0.7	6.78 .11	52.7 1.2	9.21 .12	23.3 1.2
27.5	38.06 +.06	45.4 1.7	27.97 .06	3.0 0.5	6.86 .07	53.8 1.0	9.31 .07	22.3 0.9
Sept. 6.5	38.09 .00	47.1 1.8	28.01 +.02	2.6 +0.2	6.91 +.02	54.8 0.8	9.36 +.03	21.4 0.7
16.4	38.05 −.06	49.0 1.8	28.01 −.02	2.5 0.0	6.91 −.01	55.4 0.6	9.38 .00	20.8 0.5
26.4	37.96 .12	50.8 1.8	27.97 .05	2.5 −0.1	6.88 .05	55.9 0.4	9.36 −.04	20.5 0.3
Oct. 6.4	37.82 .16	52.6 1.7	27.90 .08	2.7 0.3	6.82 .08	56.2 +0.2	9.30 .07	20.3 +0.1
16.4	37.65 .19	54.2 1.5	27.80 .10	3.0 0.4	6.73 .10	56.2 0.0	9.22 .09	20.3 −0.1
26.3	37.44 .21	55.5 1.2	27.69 .12	3.4 0.5	6.63 .11	56.1 −0.2	9.12 .11	20.4 0.2
Nov. 5.3	37.22 .23	56.6 0.9	27.57 .12	3.9 0.5	6.51 .12	55.9 0.3	9.01 .12	20.7 0.4
15.3	36.99 .22	57.2 0.5	27.44 .12	4.5 0.5	6.39 .12	55.5 0.4	8.89 .12	21.1 0.5
25.2	36.77 .21	57.5 −0.1	27.32 .12	5.0 0.5	6.27 .12	55.0 0.6	8.77 .11	21.6 0.6
Dec. 5.2	36.57 .19	57.4 +0.3	27.21 .10	5.6 0.5	6.16 .11	54.4 0.6	8.66 .11	22.2 0.6
15.2	36.39 .16	56.9 0.7	27.11 .09	6.1 0.5	6.06 .09	53.7 0.7	8.56 .09	22.9 0.7
25.2	36.25 .13	56.0 1.1	27.03 .07	6.6 0.5	5.97 .07	53.0 0.7	8.48 .08	23.6 0.7
35.1	36.14 −.09	54.7 +1.4	26.97 −.05	7.0 −0.4	5.91 −.05	52.2 −0.8	8.41 −.06	24.3 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*226 Cephei (B.)		ζ Pegasi.		*ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 30	° ′ +75 35	h m 22 35	° ′ +10 11	h m 22 45	° ′ +65 33	h m 22 46	° ′ −8 13
	s	″	s	″	s	″	s	″
Jan. 0.2	3.24 −.70	69.0 −1.5	22.41 −.07	46.1 −1.0	18.27 −.39	49.3 −1.5	14.93 −.07	43.2 −0.4
10.1	2.58 .62	67.3 2.0	22.34 .05	45.0 1.1	17.90 .34	47.7 1.9	14.87 .05	43.6 0.3
20.1	2.01 .51	65.1 2.4	22.30 .03	43.9 1.1	17.59 .28	45.6 2.3	14.82 .03	43.9 0.2
30.1	1.56 .38	62.4 2.8	22.28 −.01	42.8 1.1	17.34 .21	43.1 2.7	14.80 −.01	44.0 −0.1
Feb. 9.1	1.25 .23	59.5 3.0	22.28 +.02	41.8 1.0	17.16 .13	40.3 2.9	14.81 +.02	44.1 +0.1
19.0	1.10 −.07	56.4 3.1	22.32 .05	40.8 0.9	17.07 −.04	37.3 3.0	14.84 .04	43.9 0.3
Mar. 1.0	1.11 +.09	53.3 3.1	22.38 .08	40.1 0.7	17.08 +.05	34.3 3.0	14.90 .08	43.5 0.5
11.0	1.28 .25	50.2 3.0	22.48 .12	39.5 0.4	17.18 .15	31.3 2.9	14.99 .11	43.0 0.7
20.9	1.61 .41	47.4 2.7	22.62 .15	39.2 −0.1	17.37 .24	28.6 2.6	15.12 .14	42.2 0.9
30.9	2.10 .55	44.8 2.3	22.79 .19	39.2 +0.2	17.66 .33	26.1 2.2	15.28 .18	41.1 1.1
Apr. 9.9	2.72 .68	42.7 1.9	22.99 .22	39.6 0.5	18.03 .41	24.1 1.8	15.47 .21	39.9 1.4
19.9	3.45 .78	41.1 1.4	23.23 .25	40.3 0.8	18.48 .48	22.6 1.3	15.70 .24	38.4 1.6
29.8	4.28 .86	40.0 0.8	23.50 .28	41.3 1.2	19.00 .54	21.6 0.7	15.96 .27	36.7 1.7
May 9.8	5.17 .91	39.5 −0.2	23.79 .30	42.6 1.5	19.56 .58	21.2 −0.1	16.24 .29	34.9 1.9
19.8	6.09 .93	39.6 +0.4	24.10 .31	44.2 1.7	20.15 .60	21.3 +0.4	16.55 .31	33.0 2.0
29.8	7.03 .93	40.3 1.0	24.42 .32	46.0 2.0	20.76 .61	22.1 1.0	16.86 .33	31.0 2.0
June 8.7	7.94 .90	41.6 1.6	24.74 .32	48.1 2.1	21.36 .60	23.4 1.6	17.19 .32	28.9 2.0
18.7	8.82 .84	43.5 2.1	25.06 .31	50.3 2.2	21.95 .57	25.2 2.1	17.51 .32	27.0 1.9
28.7	9.62 .76	45.8 2.6	25.36 .29	52.5 2.3	22.50 .53	27.6 2.5	17.82 .30	25.1 1.8
July 8.6	10.34 .66	48.6 3.0	25.65 .27	54.8 2.3	23.00 .47	30.3 2.9	18.12 .28	23.3 1.7
18.6	10.95 .55	52.7 3.3	25.90 .24	57.1 2.2	23.44 .41	33.4 3.2	18.38 .25	21.7 1.5
28.6	11.44 .43	55.1 3.5	26.12 .20	59.3 2.1	23.82 .33	36.7 3.5	18.62 .22	20.3 1.3
Aug. 7.6	11.80 .30	58.8 3.7	26.31 .16	61.3 2.0	24.11 .25	40.3 3.6	18.82 .18	19.2 1.0
17.5	12.03 .16	62.5 3.8	26.45 .12	63.2 1.8	24.32 .17	44.0 3.7	18.98 .14	18.3 0.8
27.5	12.12 +.02	66.4 3.8	26.55 .08	64.9 1.6	24.45 +.08	47.7 3.7	19.09 .09	17.6 0.5
Sept. 6.5	12.07 −.11	70.2 3.8	26.61 +.04	66.4 1.4	24.49 .00	51.4 3.7	19.17 .05	17.2 0.3
16.5	11.89 .24	73.9 3.6	26.63 .00	67.6 1.1	24.45 −.08	55.1 3.5	19.20 +.01	17.1 +0.1
26.4	11.58 .37	77.5 3.4	26.61 −.03	68.6 0.9	24.33 .16	58.5 3.3	19.19 −.02	17.1 −0.1
Oct. 6.4	11.16 .48	80.8 3.1	26.56 .06	69.4 0.6	24.14 .23	61.7 3.0	19.16 .05	17.3 0.3
16.4	10.63 .58	83.7 2.8	26.48 .09	69.9 0.4	23.88 .29	64.6 2.7	19.09 .08	17.7 0.4
26.3	10.01 .66	86.3 2.4	26.38 .11	70.2 +0.2	23.57 .34	67.1 2.3	19.00 .10	18.1 0.5
Nov. 5.3	9.30 .73	88.5 1.9	26.27 .12	70.3 0.0	23.21 .38	69.1 1.8	18.89 .11	18.7 0.6
15.3	8.55 .78	90.1 1.3	26.15 .12	70.1 −0.2	22.81 .41	70.6 1.3	18.78 .12	19.3 0.6
25.3	7.76 .81	91.1 0.7	26.03 .12	69.8 0.4	22.39 .43	71.7 0.7	18.66 .11	19.9 0.6
Dec. 5.2	6.95 .81	91.6 +0.1	25.92 .11	69.2 0.6	21.96 .43	72.1 +0.1	18.55 .11	20.5 0.6
15.2	6.14 .79	91.4 −0.5	25.81 .10	68.5 0.8	21.52 .43	71.9 −0.5	18.44 .10	21.1 0.5
25.2	5.37 .74	90.6 1.1	25.71 .09	67.7 0.9	21.11 .40	71.2 1.0	18.35 .09	21.6 0.5
35.2	4.66 −.67	89.2 −1.6	25.64 −.07	66.7 −1.0	20.72 −.37	69.8 −1.6	18.27 −.06	22.1 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		*o Cephei.		θ Piscium.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$22^h\ 50^m$	$-30°\ 15'$	$22^h\ 58^m$	$+14°\ 32'$	$23^h\ 13^m$	$+67°\ 26'$	$23^h\ 21^m$	$+5°\ 42'$
	s	″	s	″	s	″	s	″
Jan. 0.2	54.59 −.10	73.8 +0.3	40.96 −.09	63.6 −1.0	35.49 −.44	57.1 −1.0	46.88 −.09	37.3 −0.8
10.2	54.50 .07	73.4 0.6	40.88 .07	62.5 1.1	35.06 .41	55.9 1.5	46.79 .08	36.5 0.8
20.1	54.44 .05	72.6 0.9	40.81 .05	61.4 1.2	34.68 .36	54.1 2.0	46.72 .06	35.7 0.8
30.1	54.41 −.02	71.6 1.1	40.77 −.03	60.2 1.2	34.35 .29	51.8 2.4	46.66 .04	34.9 0.7
Feb. 9.1	54.40 +.01	70.4 1.4	40.75 .00	58.9 1.2	34.10 .21	49.3 2.7	46.63 −.02	34.2 0.7
19.1	54.43 .04	68.9 1.6	40.76 +.02	57.8 1.1	33.94 .12	46.4 2.9	46.62 +.01	33.6 0.5
Mar. 1.0	54.49 .08	67.2 1.8	40.80 .06	56.8 0.9	33.87 −.02	43.5 3.0	46.65 .04	33.1 0.4
11.0	54.58 .11	65.3 2.0	40.88 .09	56.0 0.7	33.90 +.09	40.5 2.9	46.70 .07	32.9 −0.1
21.0	54.72 .15	63.3 2.1	40.99 .13	55.5 0.4	34.04 .19	37.6 2.7	46.79 .11	32.8 +0.1
30.9	54.89 .19	61.1 2.2	41.14 .17	55.2 −0.1	34.29 .29	35.0 2.5	46.91 .14	33.1 0.4
Apr. 9.9	55.10 .23	58.8 2.3	41.33 .21	55.3 +0.2	34.63 .39	32.7 2.1	47.08 .18	33.6 0.7
19.9	55.35 .26	56.4 2.3	41.55 .24	55.7 0.6	35.06 .47	30.9 1.6	47.28 .22	34.4 1.0
29.9	55.62 .29	54.1 2.3	41.81 .27	56.5 0.9	35.57 .54	29.6 1.1	47.51 .25	35.5 1.2
May 9.8	55.93 .32	51.8 2.3	42.09 .29	57.6 1.3	36.15 .60	28.8 −0.5	47.78 .28	36.9 1.5
19.8	56.27 .34	49.6 2.1	42.39 .31	59.0 1.6	36.77 .63	28.6 +0.1	48.07 .30	38.5 1.7
29.8	56.61 .35	47.5 2.0	42.72 .33	60.8 1.9	37.41 .65	28.9 0.6	48.38 .31	40.3 1.9
June 8.8	56.97 .36	45.7 1.8	43.04 .33	62.7 2.1	38.07 .65	29.8 1.2	48.70 .32	42.3 2.0
18.7	57.33 .35	44.0 1.5	43.37 .32	64.9 2.2	38.71 .64	31.3 1.7	49.02 .32	44.4 2.1
28.7	57.68 .34	42.7 1.2	43.68 .31	67.2 2.3	39.34 .60	33.3 2.2	49.33 .31	46.6 2.2
July 8.7	58.01 .32	41.7 0.9	43.98 .29	69.5 2.4	39.92 .55	35.7 2.6	49.64 .29	48.7 2.1
18.6	58.31 .29	41.0 0.5	44.26 .26	71.9 2.4	40.44 .49	38.5 3.0	49.92 .27	50.8 2.1
28.6	58.58 .25	40.6 +0.2	44.50 .23	74.2 2.3	40.89 .42	41.7 3.3	50.18 .24	52.8 1.9
Aug. 7.6	58.81 .21	40.6 −0.2	44.70 .19	76.5 2.2	41.27 .34	45.1 3.5	50.40 .20	54.7 1.8
17.6	58.99 .16	40.9 0.5	44.87 .14	78.6 2.0	41.57 .25	48.7 3.7	50.59 .17	56.3 1.6
27.5	59.13 .11	41.6 0.8	44.99 .10	80.5 1.8	40.78 .17	52.4 3.7	50.73 .13	57.8 1.4
Sept. 6.5	59.21 .06	42.5 1.0	45.08 .06	82.3 1.6	41.90 +.08	56.2 3.7	50.84 .09	59.1 1.1
16.5	59.25 +.01	43.6 1.2	45.12 +.02	83.8 1.4	41.94 −.01	59.9 3.7	50.90 .05	60.1 0.9
26.5	59.24 −.03	44.8 1.3	45.12 −.01	85.1 1.2	41.89 .09	63.5 3.5	50.93 +.01	60.9 0.7
Oct. 6.4	59.19 .07	46.2 1.3	45.09 .05	86.1 0.9	41.75 .17	66.9 3.3	50.93 −.02	61.5 0.4
16.4	59.11 .10	47.5 1.3	45.03 .07	86.9 0.6	41.54 .24	70.0 3.0	50.89 .05	61.8 +0.2
26.4	58.99 .12	48.8 1.3	44.95 .09	87.4 0.4	41.27 .31	72.8 2.6	50.83 .07	61.9 0.0
Nov. 5.3	58.86 .14	50.0 1.1	44.85 .11	87.7 +0.2	40.93 .36	75.2 2.2	50.75 .09	61.9 −0.1
15.3	58.72 .14	51.1 0.9	44.74 .11	87.8 −0.1	40.54 .41	77.1 1.7	50.66 .10	61.7 0.3
25.3	58.57 .15	51.9 0.7	44.62 .12	87.6 0.3	40.12 .44	78.5 1.1	50.56 .10	61.3 0.4
Dec. 5.3	58.43 .14	52.4 0.4	44.50 .12	87.1 0.5	39.67 .46	79.4 +0.6	50.45 .11	60.8 0.6
15.2	58.29 .13	52.8 −0.2	44.39 .11	86.5 0.7	39.20 .46	79.6 0.0	50.34 .10	60.2 0.7
25.2	58.17 .11	52.8 +0.1	44.29 .10	85.6 0.9	38.74 .45	79.3 −0.6	50.24 .10	59.4 0.7
35.2	58.07 −.09	52.5 +0.4	44.19 −.09	84.6 −1.1	38.30 −.42	78.4 −1.2	50.14 −.09	58.7 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		*γ Cephei.		*Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 33	+4° 57′	h m 23 34	+76° 56′	h m 23 48	+73° 43′	h m 23 53	+6° 11′
	s	″	s	″	s	″	s	″
Jan. 0.2	40.79 −.10	58.8 −0.7	17.87 −.85	87.4 −0.5	52.84 −.66	74.8 −0.3	3.14 −.10	21.7 −0.7
10.2	40.70 .08	58.1 0.7	17.04 .80	86.6 1.1	52.19 .64	74.1 1.0	3.05 .09	21.0 0.7
20.2	40.62 .07	57.3 0.7	16.27 .73	85.2 1.7	51.57 .59	72.7 1.6	2.96 .08	20.3 0.7
30.1	40.56 .05	56.6 0.7	15.59 .62	83.2 2.2	51.03 .51	70.9 2.1	2.88 .07	19.5 0.7
Feb. 9.1	40.52 −.03	55.9 0.6	15.03 .49	80.8 2.6	50.56 .41	68.6 2.5	2.82 .05	18.8 0.6
19.1	40.50 .00	55.3 0.5	14.62 .33	78.1 2.9	50.20 .29	66.0 2.8	2.79 −.02	18.2 0.5
Mar. 1.0	40.51 +.03	54.9 0.3	14.37 −.16	75.1 3.0	49.97 .16	63.2 2.9	2.78 +.01	17.8 0.4
11.0	40.56 .06	54.7 −0.1	14.29 +.02	72.1 3.1	49.88 −.02	60.2 3.0	2.80 .05	17.5 −0.2
21.0	40.63 .10	54.7 +0.1	14.40 .20	69.0 3.0	49.93 +.13	57.2 2.9	2.86 .08	17.5 +0.1
31.0	40.75 .13	55.0 0.4	14.69 .38	66.2 2.8	50.13 .27	54.3 2.8	2.96 .11	17.7 0.3
Apr. 9.9	40.90 .17	55.5 0.7	15.15 .54	63.5 2.4	50.48 .41	51.7 2.5	3.09 .15	18.1 0.6
19.9	41.09 .21	56.3 1.0	15.77 .69	61.3 2.0	50.95 .54	49.4 2.1	3.26 .19	18.9 0.9
29.9	41.32 .24	57.5 1.2	16.53 .82	59.5 1.5	51.55 .65	47.5 1.6	3.48 .23	19.9 1.2
May 9.9	41.58 .27	58.8 1.5	17.40 .92	58.2 1.0	52.24 .74	46.2 1.1	3.72 .26	21.2 1.4
19.8	41.87 .30	60.5 1.7	18.36 .99	57.5 −0.4	53.02 .80	45.3 −0.5	4.00 .29	22.7 1.6
29.8	42.17 .31	62.3 1.9	19.38 1.03	57.3 +0.1	53.85 .85	45.1 0.0	4.30 .31	24.5 1.8
June 8.8	42.49 .32	64.2 2.0	20.42 1.04	57.8 0.7	54.71 .87	45.4 +0.6	4.61 .32	26.4 2.0
18.7	42.81 .32	66.3 2.1	21.46 1.03	58.8 1.3	55.58 .86	46.3 1.2	4.94 .32	28.5 2.1
28.7	43.13 .32	68.4 2.1	22.47 .98	60.3 1.8	56.43 .84	47.7 1.7	5.26 .32	30.6 2.1
July 8.7	43.44 .30	70.6 2.1	23.42 .92	62.4 2.3	57.25 .79	49.6 2.2	5.57 .31	32.7 2.1
18.7	43.73 .28	72.6 2.0	24.29 .83	64.9 2.7	58.00 .72	52.0 2.6	5.87 .29	34.8 2.0
28.6	43.99 .25	74.6 1.9	25.07 .72	67.8 3.1	58.69 .64	54.8 3.0	6.15 .26	36.8 1.9
Aug. 7.6	44.23 .22	76.4 1.7	25.73 .60	71.0 3.4	59.28 .55	57.9 3.3	6.39 .23	38.7 1.8
17.6	44.43 .18	78.0 1.5	26.26 .47	74.5 3.6	59.78 .44	61.3 3.5	6.61 .19	40.4 1.6
27.6	44.58 .14	79.5 1.3	26.66 .33	78.2 3.7	60.17 .33	64.9 3.7	6.78 .16	41.9 1.4
Sept. 6.5	44.70 .10	80.7 1.1	26.91 .18	82.0 3.8	60.45 .22	68.7 3.8	6.92 .12	43.1 1.2
16.5	44.78 .06	81.6 0.8	27.02 +.04	85.9 3.8	60.61 +.10	72.5 3.8	7.02 .08	44.2 0.9
26.5	44.82 +.02	82.4 0.6	26.99 −.10	89.7 3.8	60.65 −.01	76.2 3.7	7.08 .04	45.0 0.7
Oct. 6.4	44.83 −.01	82.9 0.4	26.82 .24	93.4 3.6	60.58 .12	79.9 3.6	7.11 +.01	45.6 0.5
16.4	44.81 .04	83.1 +0.2	26.51 .37	96.9 3.3	60.40 .23	83.4 3.4	7.10 −.02	45.9 0.3
26.4	44.76 .06	83.2 0.0	26.08 .49	100.1 3.0	60.12 .33	86.6 3.1	7.07 .04	46.1 +0.1
Nov. 5.4	44.69 .08	83.1 −0.2	25.53 .60	102.9 2.6	59.74 .42	89.5 2.7	7.01 .06	46.1 −0.1
15.3	44.60 .09	82.9 0.3	24.87 .70	105.3 2.2	59.28 .50	92.0 2.2	6.94 .08	45.9 0.3
25.3	44.51 .10	82.5 0.5	24.14 .77	107.3 1.7	58.74 .57	94.0 1.7	6.85 .09	45.5 0.4
Dec. 5.3	44.40 .10	82.0 0.6	23.33 .83	108.7 1.1	58.14 .62	95.5 1.2	6.75 .10	45.1 0.5
15.3	44.30 .10	81.3 0.7	22.48 .86	109.4 +0.5	57.50 .65	96.3 +0.6	6.65 .10	44.5 0.6
25.2	44.20 .10	80.6 0.7	21.62 .86	109.6 −0.2	56.83 .66	96.6 0.0	6.55 .10	43.8 0.7
35.2	44.10 −.09	79.9 −0.7	20.77 −.83	109.1 −0.8	56.17 −.65	96.3 −0.6	6.45 −.10	43.1 −0.7

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
1878.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 0	18 44 24.49	25.13	-23 3 52.6	52.0	11.051	+11.72	+ 3 29.79	16 18.40	1 11.13	18 40 54.75
1	18 48 49.56	50.28	22 58 57.4	56.6	11.038	12.87	3 58.33	18.40	11.08	18 44 51.31
2	18 53 14.31	15.12	22 53 34.5	33.5	11.024	14.01	4 26.52	18.39	11.03	18 48 47.87
3	18 57 38.70	39.60	22 47 44.3	43.1	11.007	15.15	4 54.37	18.38	10.98	18 52 44.43
4	19 2 2.69	3.67	22 41 26.9	25.5	10.990	16.28	5 21.80	18 37	10.92	18 56 40.99
5	19 6 26.25	27.31	22 34 42.5	40.9	10.972	17.40	5 48.79	18.35	10.86	19 0 37.55
6	19 10 49.34	50.48	22 27 31.3	29.4	10.953	18.51	6 15.32	18.33	10.80	19 4 34.11
7	19 15 11.94	13.15	22 29 53.5	51.4	10.932	19.62	6 41.36	18.30	10.73	19 8 30.67
8	19 19 34.00	35.29	22 11 49.5	47.1	10.909	20.71	7 6.90	18.27	10.66	19 12 27.22
9	19 23 55.52	56.88	22 3 19.4	16.7	10.885	21.78	7 31.87	18.23	10.58	19 16 23.78
10	19 28 16.46	17.89	24 54 23.5	20.4	10.859	22.85	7 56.25	18.19	10.50	19 20 20.34
11	19 32 36.79	38.29	21 44 62.0	58.6	10.833	23.91	8 20.02	18.15	10.42	19 24 16.90
12	19 36 56.49	58.05	21 35 15.3	11.7	10.807	24.96	8 43.16	18.10	10.34	19 28 13.46
13	19 41 15.55	17.18	21 24 63.7	59.8	10.780	25.99	9 5.67	18.04	10.25	19 32 10.02
14	19 45 33.94	35.63	21 14 27.4	23.1	10.752	27.01	9 27.52	17.98	10.16	19 36 6.57
15	19 49 51.65	53.40	21 3 26.7	22.1	10.723	28.02	9 48.68	17.92	10.07	19 40 3.13
16	19 54 8.67	10.48	20 51 61.8	56.9	10.694	29.02	10 9.14	17.84	9.97	19 43 59.68
17	19 58 24.98	26.84	20 40 13.3	8.0	10.664	30.01	10 28.89	17.76	9.87	19 47 56.24
18	20 2 40.56	42.47	20 27 61.3	55.7	10.633	30.98	10 47.90	17.68	9.77	19 51 52.80
19	20 6 55.41	57.37	20 15 26.2	20.3	10.602	31.93	11 6.19	17.59	9.67	19 55 49.36
20	20 11 9.52	11.53	20 2 28.2	22.0	10.571	32.88	11 23.75	17.50	9.57	19 59 45.92
21	20 15 22.88	24.93	19 49 7.9	1.3	10.540	33.81	11 40.55	17.40	9.46	20 3 42.48
22	20 19 35.48	37.57	19 35 25.4	18.5	10.508	34.72	11 56.59	17.29	9.35	20 7 39.03
23	20 23 47.32	49.45	19 21 21.1	13.9	10.476	35.63	12 11.87	17.17	9.24	20 11 35.59
24	20 27 58.39	60.55	19 6 55.2	47.7	10.444	36.52	12 26.37	17.05	9.13	20 15 32.15
25	20 32 8.68	10.88	18 52 8.4	0.5	10.412	37.38	12 40.09	16.92	9.02	20 19 28.71
26	20 36 18.17	20.41	18 36 60.8	52.6	10.379	38.24	12 53.04	16.79	8.91	20 23 25.26
27	20 40 26.88	29.14	18 21 32.8	24.3	10.346	39.08	13 5.20	16.66	8.80	20 27 21.82
28	20 44 34.79	37.08	18 5 44.8	36.0	10.313	39.90	13 16.55	16.52	8.69	20 31 18.37
29	20 48 41.90	44.21	17 49 37.4	28.3	10.280	40.71	13 27.09	16.38	8.58	20 35 14.93
30	20 52 48.20	50.52	17 33 10.7	1.3	10.246	41.50	13 36.82	16.24	8.46	20 39 11.49
31	20 56 53.69	56.03	17 16 25.3	15.6	10.212	42.27	13 45.74	16.09	8.35	20 43 8.05
Feb. 1	21 0 58.36	60.72	16 59 21.6	11.7	10.178	43.03	13 53.84	15.94	8.23	20 47 4.60
2	21 5 2.21	4.58	16 41 60.0	49.8	10.143	43.76	14 1.12	15.79	8.12	20 51 1.16
3	21 9 5.24	7.62	16 24 21.0	10.5	10.108	44.48	14 7.59	15.64	8.00	20 54 57.71
4	21 13 7.44	9.83	16 6 25.0	14.3	10.074	45.18	14 13.23	15.48	7.89	20 58 54.27
5	21 17 8.82	11.21	15 48 12.3	1.5	10.040	45.86	14 18.04	15.32	7.78	21 2 50.83
6	21 21 9.38	11.77	15 29 43.5	32.4	10.006	46.53	14 22.03	15.15	7.66	21 6 47.39
7	21 25 9.12	11.61	15 10 59.0	47.7	9.972	47.17	14 25.20	14.98	7.54	21 10 43.94
8	21 29 8.04	10.43	14 51 59.2	47.8	9.938	47.80	14 27.56	14.81	7.43	21 14 40.50
9	21 33 6.16	8.55	14 32 44.6	32.9	9.905	48.40	14 29.12	14.63	7.32	21 18 37.05
10	21 37 3.47	5.86	14 13 15.6	3.8	9.871	48.99	14 29.88	14.45	7.21	21 22 33.61
11	21 40 59.98	62.36	13 53 32.6	20.7	9.838	49.57	14 29.83	14.27	7.10	21 26 30.16
12	21 44 55.71	58.08	13 33 36.0	24.0	9.806	50.13	14 28.98	14.08	6.99	21 30 26.72
13	21 48 50.66	53.02	13 13 26.1	14.0	9.774	50.67	14 27.37	13.89	6.88	21 34 23.27
14	21 52 44.86	47.21	12 52 63.5	51.3	9.743	51.20	14 25.01	13.69	6.77	21 38 19.83
15	21 56 38.32	40.65	12 32 28.5	16.2	9.713	51.70	14 21.92	13.49	6.67	21 42 16.38
16	22 0 31.05	33.36	12 11 41.5	29.1	9.683	52.19	14 18.09	13.29	6.56	21 46 12.94
17	22 4 23.07	25.36	11 50 42.9	30.4	9.653	52.67	14 13.55	13.08	6.46	21 50 9.49
18	22 8 14.39	16.66	11 29 33.1	20.6	9.624	53.13	14 8.31	12.86	6.36	21 54 6.05
19	22 12 5.03	7.28	11 7 72.4	59.9	9.596	53.57	14 2.37	12.64	6.26	21 58 2.60
20	22 15 55.02	57.25	10 46 41.3	28.8	9.569	54.00	13 55.79	12.42	6.16	22 1 59.16
21	22 19 44.37	46.58	10 24 60.1	47.6	9.542	54.42	13 48.58	12.19	6.07	22 5 55.72
22	22 23 33.09	35.27	10 2 69.2	56.7	9.517	54.81	13 40.74	11.96	5.98	22 9 52.28
23	22 27 21.19	23.33	9 40 69.0	56.6	9.492	55.19	13 32.29	11.73	5.89	22 13 48.83
24	22 31 8.71	10.82	9 18 59.9	47.6	9.468	55.55	13 23.26	11.49	5.80	22 17 45.38
25	22 34 55.66	57.74	8 56 42.3	30.0	9.444	55.90	13 13.65	11.25	5.72	22 21 41.93
26	22 38 42.05	44.10	8 34 16.6	4.3	9.421	56.23	13 3.48	11.01	5.64	22 25 38.49
27	22 42 27.90	29.92	8 11 43.3	31.1	9.399	56.54	12 52.78	10.77	5.56	22 29 35.04
28	22 26 13.23	15.21	– 7 48 62.7	50.6	9.378	+56.84	+12 41.54	16 10.52	1 5.48	22 33 31.60

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0ˢ.19 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1878.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Mar. 1	22 49 58.04	59.98	− 7 26 15.2	3.3	9.357	+57.12	+12 29.80	16 10.27	1 5.40	22 37 28.15
2	22 53 42.36	44.27	7 3 21.3	9.5	9.337	57.37	12 17.56	10.02	5.33	22 41 24.71
3	22 57 26.20	28.08	6 40 21.4	9.8	9.317	57.61	12 4.86	9.77	5.26	22 45 21.26
4	23 1 9.58	11.42	6 17 16.0	4.5	9.298	57.83	11 51.68	9.52	5.19	22 49 17.81
5	23 4 52.51	54.31	5 53 65.4	54.1	9.279	58.04	11 38.05	9.27	5.13	22 53 14.36
6	23 8 35.01	36.77	5 30 50.0	38 9	9.261	58.23	11 23.98	9.02	5.07	22 57 10.92
7	23 12 17.09	18.81	5 7 30.2	19.3	9.245	58.40	11 9.51	8.77	5.01	23 1 7.47
8	23 15 58.77	60.45	4 43 66.6	55.9	9.229	58.56	10 54.64	8.52	4.95	23 5 4.02
9	23 19 40.06	41.69	4 20 39.4	29.0	9.213	58.70	10 39.38	8.25	4.90	23 9 0.57
10	23 23 20.99	22.58	3 56 69.2	59.0	9.198	58.81	10 23.76	8.00	4.85	23 12 57.13
11	23 27 1.57	3.12	3 33 36.1	26.1	9.184	58.92	10 7.79	7.74	4.80	23 16 53.68
12	23 30 41.83	43.34	3 9 60.7	51.0	9.171	59.01	9 51.49	7.48	4.76	23 20 50.24
13	23 24 21.78	23.25	2 46 23.3	13.9	9.159	59.09	9 34.89	7.22	4.72	23 24 46.79
14	23 38 1.45	2.87	2 22 44.3	35.2	9.148	59.15	9 18.00	6.96	4.68	23 28 43.34
15	23 41 40.86	42.24	1 58 63.8	55.0	9.137	59.20	9 0.86	6.70	4.65	23 32 39.89
16	23 45 20.03	21.36	1 35 22.5	14.0	9.128	59.23	8 43.49	6.43	4.62	23 36 36.45
17	23 48 58.99	60.27	1 11 40.6	32.4	9.120	59.25	8 25.90	6.16	4.59	23 40 33.00
18	23 52 37.76	38.99	0 47 58.4	50.4	9.113	59.26	8 8.11	5.89	4.57	23 44 29.56
19	23 56 16.36	17.54	0 24 16.3	8.6	9.106	59.25	7 50.17	5.61	4.55	23 48 26.11
20	23 59 54.82	55.96	− 0 0 34.6	27.2	9.101	59.22	7 32.08	5.34	4.53	23 52 22.66
21	0 3 33.16	34.26	+ 0 23 6.5	13.6	9.095	59.19	7 13.87	5.06	4.51	23 56 19.21
22	0 7 11.41	12.46	0 46 46.5	53.3	9.092	59.14	6 55.57	4.78	4.49	0 0 15.77
23	0 10 49.58	50.59	1 10 25.0	31.5	9.090	59.07	6 37.19	4.50	4.48	0 4 12.32
24	0 14 27.70	28.66	1 34 1.8	8.0	9.088	58.99	6 18.75	4.22	4.47	0 8 8.88
25	0 18 5.80	6.71	1 57 36.5	42.4	9.087	58.90	6 0.30	3.94	4.46	0 12 5.43
26	0 21 43.89	44.75	2 21 8.8	14.3	9.087	58.78	5 41.85	3.66	4.46	0 16 1.99
27	0 25 22.00	22.81	2 44 38.2	43.4	9.088	58.66	5 23.41	3.37	4.46	0 19 58.54
28	0 29 0.14	0.91	3 8 4.4	9.3	9.090	58.52	5 5.00	3.09	4.46	0 23 55.09
29	0 32 38.33	39.06	3 31 27.2	31.8	9.093	58.36	4 46.64	2.80	4.47	0 27 51.64
30	0 36 16.59	17.27	3 54 46.0	50.3	9.096	58.19	4 28.34	2.52	4.48	0 31 48.20
31	0 39 54.94	55.57	4 18 0.6	4.6	9.099	58.01	4 10.13	2.24	4.49	0 35 44.75
Apr. 1	0 43 33.39	33.98	4 41 10.5	14.2	9.104	57.81	3 52.04	1.96	4.50	0 39 41.31
2	0 47 11.96	12.51	5 4 15.3	18.7	9.109	57.59	3 34.06	1.68	4.52	0 43 37.86
3	0 50 50.66	51.16	5 27 14.8	17.9	9.115	57.36	3 16.21	1.40	4.54	0 47 34.42
4	0 54 29.51	29.97	5 50 8.4	11.2	9.121	57.10	2 58.52	1.13	4.57	0 51 30.97
5	0 58 8.52	8.93	6 12 55.8	58.3	9.129	56.84	2 40.99	0.86	4.60	0 55 27.52
6	1 1 47.72	48.08	6 35 36.8	39.0	9.137	56.56	2 23.63	0.59	4.63	0 59 24.07
7	1 5 27.12	27.43	6 58 10.9	12.8	9.145	56.26	2 6.46	0.32	4.66	1 3 20.63
8	1 9 6.72	6.99	7 20 37.7	39.3	9.154	55.95	1 49.52	16 0.05	4.70	1 7 17.18
9	1 12 46.55	46.78	7 42 57.0	58.4	9.164	55.63	1 32.80	15 59.78	4.74	1 11 13.74
10	1 16 26.62	26.81	8 5 8.4	9.5	9.174	55.30	1 16.32	59.52	4.78	1 15 10.29
11	1 20 6.95	7.10	8 27 11.5	12.4	9.186	54.95	1 0.11	59.25	4.82	1 19 7.85
12	1 23 47.56	47.67	8 49 6.1	6.7	9.198	54.59	0 44.17	58.99	4.87	1 23 3.40
13	1 27 28.46	28.53	9 10 51.7	52.2	9.211	54.22	0 28.51	58.72	4.91	1 26 59.96
14	1 31 9.69	9.72	9 32 28.3	28.5	9.224	53 82	+ 0 13.18	58.46	4.96	1 30 56.51
15	1 34 51.25	51.24	9 53 55.4	55.4	92.39	53.42	− 0 1.82	58.19	5.01	1 34 53.07
16	1 38 33.15	33.11	10 15 12.6	12.3	9.254	53.01	0 16.46	57.93	5.07	1 38 49.62
17	1 42 15.43	15.35	10 36 19.7	19.2	9.270	52.58	0 30.73	57.66	5.12	1 42 46.17
18	1 45 58.09	57.97	10 57 16.4	15.8	9.287	52.13	0 44.61	57.40	5.18	1 46 42.72
19	1 49 41.16	41.00	11 18 2.3	1.5	9.304	51.68	0 58.09	57.13	5.24	1 50 39.28
20	1 53 24.66	24.47	11 38 37.2	36.2	9.322	51.22	1 11.15	56.87	5.30	1 54 35.83
21	1 57 8.60	8.38	11 58 60.7	59.5	9.340	50.74	1 23.78	56.61	5.36	1 58 32.39
22	2 0 52.99	52.73	12 19 12.6	11.3	9.359	50.24	1 35.94	56.35	5.43	2 2 28.94
23	2 4 37.85	37.56	12 39 12.4	10.9	9.379	49.74	1 47.63	56.09	5.49	2 6 25.50
24	2 8 23.19	22.87	12 58 60.0	58.3	9.399	49.22	1 58.84	55.83	5.56	2 10 22.05
25	2 12 9.02	8.67	13 18 34.9	33.1	9.420	48.68	2 9.55	55.58	5.63	2 14 18.61
26	2 15 55.37	54.99	13 37 56.7	54.8	9.441	48.13	2 19.76	55.33	5.70	2 18 15.16
27	2 19 42.23	41.83	13 57 5.2	3.2	9.463	47.57	2 29.46	55.08	5.77	2 22 11.72
28	2 23 29.61	29.18	14 15 60.0	57.9	9.485	47.00	2 38.62	54.83	5.85	2 26 8.27
29	2 27 17.52	17.07	14 34 40.8	38.5	9.507	46.40	2 47.26	54.58	5.93	2 30 4.83
30	2 31 5.98	5.52	+14 53 7.2	4.9	9.530	+45.79	− 2 55.37	15 54.34	1 6.00	2 34 1.38

Note.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0ˢ.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean-Noon.
1878.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 1	2 34 54.97	54.49	+15 11 18.9	16.6	9.552	+45.17	−3 2.94	15 54.10	1 6.09	2 37 57.94
2	2 38 44.50	44.00	15 29 15.5	13.1	9.575	44.54	3 9.97	53.87	6.17	2 41 54.50
3	2 42 34.58	34.06	15 46 56.7	54.2	9.598	43.89	3 16.46	53.64	6.25	2 45 51.06
4	2 46 25.20	24.66	16 4 22.2	19.7	9.621	43.23	3 22.41	53.41	6.33	2 49 47.61
5	2 50 16.37	15.81	16 21 31.6	29.1	9.644	42.55	3 27.79	53.19	6.41	2 53 44.17
6	2 54 8.10	7.52	16 38 24.8	22.3	9.667	41.87	3 32.61	52.97	6.49	2 57 40.72
7	2 57 60.38	59.79	16 54 61.3	58.8	9.690	41.17	3 36.89	52.76	6.57	3 1 37.28
8	3 1 53.21	52.61	17 11 20.8	18.3	9.713	40.45	3 40.61	52.55	6.65	3 5 33.83
9	3 5 46.59	45.98	17 27 23.1	20.6	9.736	39.72	3 43.78	52.34	6 73	3 9 30.39
10	3 9 40.54	39.92	17 43 7.7	5.2	9.759	38.99	3 46.40	52.14	6.81	3 13 26.95
11	3 13 35.04	34.42	17 58 34.6	32.1	9.782	38.25	3 48.45	51.93	6.89	3 17 23.51
12	3 17 30.10	29.47	18 13 43.3	40.8	9.805	37.49	3 49.95	51.73	6.98	3 21 20.06
13	3 21 25.71	25.07	18 28 33.7	31.3	9.828	36.71	3 50.90	51.53	7.06	3 25 16 62
14	3 25 21.89	21.25	18 43 5.4	3.1	9.852	35.93	3 51.28	51.33	7.14	3 29 13.17
15	3 29 18.63	17.99	18 57 18.3	16.0	9.875	35.14	3 51.10	51.13	7.22	3 33 9.73
16	3 33 15.93	15.29	19 11 12.1	9.9	9.899	34.34	3 50.36	50.94	7.31	3 37 6.29
17	3 37 13.79	13.15	19 24 46.3	44.2	9.922	33.52	3 49.06	50.75	7.39	3 41 2.85
18	3 41 12.22	11.58	19 37 60.8	58.8	9.946	32.69	3 47.19	50.56	7.47	3 44 59.40
19	3 45 11.21	10.58	19 50 55.5	53.5	9.969	31.86	3 44.75	50.37	7.55	3 48 55.96
20	3 49 10.76	10.13	20 3 30.1	28.1	9.993	31.01	3 41.75	50.19	7.63	3 52 52.51
21	3 53 10.87	10.25	20 15 44.1	42.2	10.016	30.16	3 38.20	50.01	7.71	3 56 49.07
22	3 57 11.53	10.93	20 27 37.4	35.6	10.039	29.28	3 34.10	49.83	7.77	4 0 45.63
23	4 1 12.73	12.14	20 39 9 9	8.2	10.061	28.41	3 29.46	49.65	7.84	4 4 42.19
24	4 5 14.47	13.89	20 50 21.1	19.5	10.083	27.52	3 24.28	49.48	7.91	4 8 38.74
25	4 9 16.73	16 16	21 1 10.9	9.4	10.104	26.63	3 18.58	49.31	7.98	4 12 35.30
26	4 13 19.50	18.95	21 11 39.1	37.7	10.125	25.71	3 12.37	49 15	8.05	4 16 31.86
27	4 17 22.78	22.25	21 21 45.4	44.1	10.146	24.79	3 5.66	48.99	8.12	4 20 28.42
28	4 21 26.55	26.04	21 31 29.5	28.2	10.166	23.87	2 58,46	48.83	8.19	4 24 24.98
29	4 25 30.79	30.30	21 40 51.3	50.2	10.185	22.94	2 50.78	48.68	8.25	4 28 21.54
30	4 29 35.48	35.01	21 49 50.5	49.5	10.204	22.00	2 42.64	48.54	8.31	4 32 18.09
31	4 33 40.60	40.15	21 58 27.0	26.1	10.222	21.05	2 34.07	48.40	8.37	4 36 14.65
June 1	4 37 46.14	45.72	22 6 40.4	39.5	10.238	20.08	2 25.08	48.26	8.43	4 40 11.21
2	4 41 52.07	51.68	22 14 30.7	30.0	10.254	19.11	2 15.71	48.13	8.48	4 44 7.77
3	4 45 58.36	58.00	22 21 57.8	57.2	10.269	18.14	2 5.98	48.01	8.53	4 48 4.32
4	4 50 5.01	4.68	22 29 1.4	0.8	10.283	17.16	1 55.89	47.89	8.58	4 52 0.88
5	4 54 11.99	11.68	22 35 41.4	40.9	10.297	16.17	1 45.47	47.78	8.63	4 55 57.44
6	4 58 19.27	18.99	22 41 57.6	57.2	10.309	15.18	1 34.74	47.67	8.67	4 59 54.00
7	5 2 26.84	26.59	22 47 50.0	49.6	10.320	14.19	1 23.73	47.56	8.71	5 3 50.56
8	5 6 34.68	34.47	22 53 18.4	18.1	10.331	13.19	1 12.46	47.46	8.75	5 7 47.12
9	5 10 42.76	42.58	22 58 22.6	22.4	10.341	12.18	1 0.93	47.36	8.79	5 11 43.67
10	5 14 51.07	50.92	23 3 2.6	2.5	10.350	11.17	0 49.17	47.26	8.82	5 15 40.23
11	5 18 59.59	59.47	23 7 18.3	18.2	10.359	10.15	0 37.20	47.17	8.85	5 19 36.79
12	5 23 8.30	8.22	23 11 9.7	9.6	10.366	9.14	0 25.05	47.08	8.88	5 23 33.35
13	5 27 17.17	17.13	23 14 36.6	36.6	10.373	8.12	0 12.74	47.00	8.90	5 27 29.91
14	5 31 26.19	26.18	23 17 38.9	38.9	10.379	7.10	−0 0.28	46.92	8.92	5 31 26.47
15	5 35 35.35	35.38	23 20 16.6	16.6	10.384	6.07	+0 12.32	46.84	8.94	5 35 23.03
16	5 39 44.62	44.69	23 22 29.7	29.7	10.388	5.05	0 25.04	46.77	8.96	5 39 19.59
17	5 43 53.98	54.08	23 24 18.2	18.2	10.392	4.01	0 37.86	46.70	8.97	5 43 16.14
18	5 48 3.42	3.56	23 25 42.0	42.0	10.394	2.98	0 50.74	46.63	8.98	5 47 12.70
19	5 52 12.91	13.08	23 26 41.0	41.0	10.396	1.94	1 3.66	46.56	8.98	5 51 9.26
20	5 56 22.43	22.64	23 27 15.1	15.1	10.397	+ 0.91	1 16.62	46.50	8.98	5 55 5.82
21	6 0 31.97	32.22	23 27 24.4	24.4	10.397	− 0.13	1 29.60	46.44	8.98	5 59 2.38
22	6 4 41.50	41.79	23 27 8.9	8.9	10.396	1.16	1 42.58	46.39	8.97	6 2 58.94
23	6 8 50.99	51.32	23 26 28.6	28.6	10.394	2.19	1 55.52	46.34	8.96	6 6 55.49
24	6 13 0.43	0.80	23 25 23.5	23.5	10.391	3.22	2 8.39	46.29	8.95	6 10 52.05
25	6 17 9.79	10.20	23 23 53.6	53.6	10.388	4.26	2 21.20	46.26	8.93	6 14 48.61
26	6 21 19.05	19.49	23 21 59.0	58.8	10.383	5.29	2 33.90	46.22	8.91	6 18 45.17
27	6 25 28.17	28.64	23 19 39.7	39.4	10.376	6.31	2 46.46	46.19	8.89	6 22 41.73
28	6 29 37.12	37.63	23 16 55.7	55.3	10.368	7.33	2 58.86	46.17	8.86	6 26 38.29
29	6 33 45.88	46.43	23 13 47.3	46.9	10.360	8.35	3 11.07	46.15	8.83	6 30 34.85
30	6 37 54.44	55.02	+23 10 14.4	13.9	10.351	− 9.37	+3 23.06	15 46.14	1 8.80	6 34 31.41

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract $0^{s}.18$ from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date. 1878.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	Hourly Motion, Mean Noon. Right Ascension.	Hourly Motion, Mean Noon. Declination.	Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 42 2.75	3.36	+23 6 17.1	16.5	10.340	-10.38	+3 34.82	15 46.13	1 8.77	6 38 27.96
2	6 46 10.81	11.45	23 1 55.6	54.9	10.328	11.39	3 46.32	46.13	8.73	6 42 24.51
3	6 50 18.57	19.24	22 57 9.9	9.1	10.316	12.40	3 57.53	46.13	8.69	6 46 21.08
4	6 54 26.01	26.71	22 51 60.2	59.3	10.302	13.40	4 8.41	46.14	8.65	6 50 17.64
5	6 58 33.11	33.84	22 46 26.7	25.7	10.288	14.39	4 18.95	46.16	8.61	6 54 14.20
6	7 2 39.86	40.62	22 40 29.5	28.3	10.273	15.37	4 29.14	46.18	8.56	6 58 10.76
7	7 6 46.22	47.01	22 34 8.7	7.4	10.256	16.35	4 38.95	46.21	8.51	7 2 7.31
8	7 10 52.19	53.00	22 27 24.6	23.2	10.239	17.32	4 48.37	46.24	8.46	7 6 3.87
9	7 14 57.75	58.58	22 20 17.2	15.7	10.222	18.29	4 57.36	46.27	8.40	7 10 0.43
10	7 19 2.88	3.73	22 12 46.7	45.2	10.204	19.24	5 5.92	46.31	8.34	7 13 56.99
11	7 23 7.55	8.43	22 4 53.5	51.8	10.185	20.19	5 14.04	46.35	8.28	7 17 53.55
12	7 27 11.76	12.66	21 56 37.6	35.7	10.166	21.13	5 21.69	46.39	8.22	7 21 50.11
13	7 31 15.51	16.42	21 47 59.0	57.0	10.147	22.07	5 28.88	46.44	8.15	7 25 46.67
14	7 35 18.79	19.72	21 38 58.2	56.1	10.127	23.00	5 35.59	46.49	8.09	7 29 43.23
15	7 39 21.57	22.52	21 29 35.2	33.0	10.106	23.91	5 41.83	46.54	8.02	7 33 39.78
16	7 43 23.85	24.81	21 19 50.3	47.9	10.085	24.82	5 47.56	46.59	7.95	7 37 36.34
17	7 47 25.62	26.59	21 9 43.6	41.1	10.063	25.73	5 52.76	46.65	7.87	7 41 32.89
18	7 51 26.87	27.86	20 59 15.4	12.8	10.041	26.62	5 57.45	46.71	7.79	7 45 29.45
19	7 55 27.60	28.60	20 48 25.9	23.2	10.019	27.51	6 1.61	46.78	7.71	7 49 26.01
20	7 59 27.81	28.82	20 37 15.2	12.4	9.997	28.38	6 5.26	46.85	7.63	7 53 22.57
21	8 3 27.47	28.49	20 25 43.7	40.8	9.974	29.24	6 8.39	46.93	7.55	7 57 19.12
22	8 7 26.59	27.62	20 13 51.6	48.6	9.951	30.09	6 10.95	47.01	7.47	8 1 15.68
23	8 11 25.15	26.18	20 1 39.1	36.0	9.928	30.94	6 12.94	47.09	7.39	8 5 12.24
24	8 15 23.15	24.18	19 49 6.3	3.0	9.905	31.77	6 14.37	47.18	7.31	8 9 8.80
25	8 19 20.58	21.61	19 36 13.6	10.2	9.881	32.60	6 15.24	47.27	7.22	8 13 5.35
26	8 23 17.43	18.46	19 22 61.3	57.9	9.857	33.41	6 15.52	47.37	7.14	8 17 1.91
27	8 27 13.70	14.73	19 9 29.7	26.2	9.833	34.21	6 15.23	47.47	7.05	8 20 58.47
28	8 31 9.38	10.40	18 55 39.1	35.5	9.809	35.00	6 14.36	47.58	6.97	8 24 55.03
29	8 35 4.47	5.48	18 41 29.6	25.9	9.784	35.77	6 12.89	47.70	6.88	8 28 51.58
30	8 38 58.95	59.95	18 26 61.7	58.0	9.758	36.54	6 10.81	47.82	6.79	8 32 48.14
31	8 42 52.82	53.81	18 12 15.6	11.8	9.732	37.29	6 8.12	47.94	6.70	8 36 44.69
Aug. 1	8 46 46.07	47.05	17 57 11.7	7.9	9.706	38.03	6 4.81	48.07	6.61	8 40 41.25
2	8 50 38.70	39.67	17 41 50.2	46.4	9.680	38.75	6 0.87	48.20	6.53	8 44 37.81
3	8 54 30.71	31.67	17 26 11.5	7.6	9.654	39.47	5 56.32	48.34	6.44	8 48 34.37
4	8 58 22.10	23.04	17 10 15.9	12.0	9.628	40.17	5 51.15	48.48	6.36	8 52 30.92
5	9 2 12.87	13.79	16 53 63.8	59.9	9.603	40.85	5 45.37	48.63	6.27	8 56 27.48
6	9 6 3.04	3.95	16 37 35.2	31.3	9.578	41.52	5 38.98	48.78	6.19	9 0 24.03
7	9 9 52.60	53.48	16 20 50.7	46.8	9.553	42.19	5 31.98	48.93	6.10	9 4 20.59
8	9 13 41.56	42.42	16 3 50.5	46.7	9.528	42.83	5 24.39	49.09	6.02	9 8 17.15
9	9 17 29.92	30.76	15 46 34.9	31.1	9.503	43.47	5 16.19	49.25	5.93	9 12 13.71
10	9 21 17.69	18.50	15 29 4.2	0.4	9.479	44.09	5 7.41	49.42	5.85	9 16 10.26
11	9 25 4.88	5.66	15 11 18.6	14.9	9.455	44.70	4 58.05	49.59	5.77	9 20 6.82
12	9 28 51.50	52.25	14 53 18.6	15.0	9.431	45.29	4 48.12	49.76	5.69	9 24 3.37
13	9 32 37.56	38.28	14 35 4.2	0.7	9.408	45.88	4 37.63	49.93	5.61	9 27 59.93
14	9 36 23.08	23.77	14 16 35.9	32.5	9.385	46.46	4 26.58	50.11	5.53	9 31 56.48
15	9 40 8.07	8.73	13 57 53.9	50.5	9.364	47.03	4 15.01	50.28	5.46	9 35 53.04
16	9 43 52.54	53.17	13 38 58.5	55.2	9.343	47.58	4 2.93	50.46	5.38	9 39 49.59
17	9 47 36.51	37.11	13 19 49.9	46.8	9.322	48.11	3 50.34	50.64	5.31	9 43 46.15
18	9 51 19.98	20.54	13 0 28.7	25.7	9.302	48.64	3 37.26	50.72	5.24	9 47 42.70
19	9 55 2.97	3.49	12 40 55.0	52.2	9.282	49.16	3 23.70	50.90	5.16	9 51 39.26
20	9 58 45.50	45.99	12 21 9.0	6.4	9.263	49.66	3 9.67	51.19	5.09	9 55 35.81
21	10 2 27.57	28.02	12 1 11.2	8.7	9.244	50.15	2 55.19	51.38	5.02	9 59 32.37
22	10 6 9.21	9.62	11 40 61.7	59.4	9.225	50.63	2 40.26	51.58	4.95	10 3 28.92
23	10 9 50.42	50.79	11 20 41.1	39.0	9.207	51.09	2 24.91	51.78	4.88	10 7 25.48
24	10 13 31.20	31.53	11 0 9.5	7.7	9.190	51.53	2 9.15	51.98	4.82	10 11 22.03
25	10 17 11.58	11.87	10 39 27.5	25.8	9.173	51.97	1 52.98	52.19	4.76	10 15 18.59
26	10 20 51.56	51.81	10 18 35.0	33.5	9.157	52.39	1 36.41	52.40	4.70	10 19 15.14
27	10 24 31.16	31.37	9 57 32.8	31.5	9.141	52.79	1 19.46	52.62	4.64	10 23 11.70
28	10 28 10.40	10.56	9 36 21.0	20.0	9.126	53.18	1 2.14	52.84	4.59	10 27 8.25
29	10 31 49.28	49.39	9 14 60.1	59.4	9.112	53.56	0 44.47	53.06	4.54	10 31 4.81
30	10 35 27.81	27.88	8 53 30.3	29.8	9.098	53.91	0 26.47	53.29	4.49	10 35 1.36
31	10 39 6.00	6.02	+ 8 31 52.1	51.8	9.084	-54.26	+0 8.10	15 53.52	1 4.44	10 38 57.91

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract $0^s.19$ from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion. Mean Noon.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
1878.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Sept. 1	10 42 43.87	43.85	+ 8 10 5.7	5.7	9.071	−54.59	− 0 10.58	15 53.75	1 4.40	10 42 54.46
2	10 46 21.44	21.37	7 48 11.5	11.8	9.059	54.91	0 29.56	53.99	4.35	10 46 51.02
3	10 49 58.72	58.60	7 26 9.8	10.6	9.048	55.21	0 48.83	54.23	4.31	10 50 47.57
4	10 53 35.73	35.56	7 4 1.1	2.2	9.037	55.50	1 8.37	54.47	4.27	10 54 44.13
5	10 57 12.48	12.26	6 41 45.6	47.0	9 027	55.78	1 28.16	54.72	4.24	10 58 40.68
6	11 0 49.00	48.73	6 19 23.7	25.4	9.017	56.04	1 48.20	54.97	4.21	11 2 37.24
7	11 4 25.29	24.97	5 56 55.5	57.5	9.008	56.29	2 8.47	55.22	4.18	11 6 33.79
8	11 8 1.38	1.01	5 34 21.5	23.9	9.001	56.53	2 28.93	55.47	4.16	11 10 30.35
9	11 11 37.30	36.88	5 11 41.9	44.6	8.994	56.76	2 49.56	55.72	4.14	11 14 26.90
10	11 15 13.06	12.59	4 48 57.1	60.1	8.987	56.97	3 10.34	55.97	4.12	11 18 23.46
11	11 18 48.69	48.17	4 26 7.3	10.7	8.982	57.17	3 31.24	56.22	4.11	11 22 20.00
12	11 22 24.21	23.64	4 3 12.9	16.6	8.978	57.36	3 52.26	56.48	4.09	11 26 16.56
13	11 25 59.65	59.03	3 40 14.1	18.1	8.976	57.53	4 13.38	56.74	4.08	11 30 13.11
14	11 29 35.02	34.34	3 17 11.4	15.8	8.974	57.69	4 34.57	56.99	4.07	11 34 9.67
15	11 33 10.35	9.62	2 54 4.9	9.7	8.972	57.84	4 55.79	57.25	4.07	11 38 6.22
16	11 36 45.67	44.88	2 30 54.9	60.0	8.972	57.97	5 17.01	57.50	4.07	11 42 2.77
17	11 40 20.98	20.14	2 7 41.8	47.2	8.972	58.10	5 38.24	57.76	4.06	11 45 59.32
18	11 43 56.32	55.43	1 44 26.0	31.8	8.973	58.21	5 59.45	58.02	4.06	11 49 55.88
19	11 47 31.71	30.77	1 21 7.7	13.8	8.976	58.31	6 20.61	58.28	4.06	11 53 52.43
20	11 51 7.17	6.17	0 57 47.3	53.7	8.979	58.38	6 41.69	58.54	4.07	11 57 48.98
21	11 54 42.72	41.67	0 34 25.1	32.0	8.983	58.45	7 2.69	58.80	4.08	12 1 45.53
22	11 58 18.37	17.27	+ 0 11 1.6	8.8	8.988	58.50	7 23.59	59.06	4.09	12 5 42.09
23	12 2 54.14	52.99	− 0 12 23.0	15.4	8.993	58.53	7 44.37	59.33	4.11	12 9 38.64
24	12 6 30.06	28.85	0 35 48.1	40.2	8.999	58.55	8 5.01	59.60	4.13	12 13 35.20
25	12 9 6.14	4.88	0 59 13.7	5.4	9.007	58.56	8 25.48	15 59.87	4.15	12 17 31.75
26	12 12 42.39	41.08	1 22 39.2	30.6	9.015	58.55	8 45.78	16 0.14	4.18	12 21 28.31
27	12 16 18.85	17.48	1 45 64.2	55.3	9.023	58.52	9 5.87	0.42	4.21	12 25 24.86
28	12 19 55.52	54.10	2 9 28.4	19.2	9.032	58.48	9 25.75	0.69	4.24	12 29 21.41
29	12 23 32.41	30.94	2 32 51.4	41.9	9.042	58.43	9 45.42	0.97	4.28	12 33 17.96
30	12 27 9.55	8.03	2 56 12.9	3.1	9.052	58.35	10 4.84	1.25	4.32	12 37 14.52
Oct. 1	12 30 46.96	45.39	3 19 32.3	22.2	9.064	58.26	10 23.98	1.53	4.37	12 41 11.07
2	12 34 24.64	23.02	3 42 49.4	39.0	9.076	58.16	10 42.83	1.81	4.42	12 45 7.63
3	12 38 2.63	0.96	4 5 63.9	53.3	9.089	58.04	11 1.39	2.10	4.47	12 49 4.18
4	12 41 40.93	39.21	4 29 15.4	4.5	9.103	57.91	11 19.64	2.39	4.52	12 53 0.73
5	12 45 19.58	17.81	4 52 23.4	12.2	9.117	57.76	11 37.55	2.67	4.58	12 56 57.28
6	12 48 58.58	56.77	5 15 27.7	16.3	9.132	57.59	11 55.10	2.95	4.63	13 0 53.84
7	12 52 37.97	36.11	5 38 28.0	16.4	9.149	57.42	12 12.27	3.23	4.69	13 4 50.39
8	12 56 17.76	15.85	6 1 23.9	12.1	9.166	57.23	12 29.04	3.51	4.75	13 8 46.95
9	12 59 57.98	56.02	6 24 14.9	2.8	9.184	57.02	12 45.37	3.79	4.82	13 12 43.50
10	13 3 38.65	36.65	6 46 60.8	48.5	9.203	56.80	13 1.26	4.07	4.89	13 16 40.06
11	13 7 19.78	17.74	7 9 41.3	28.8	9.223	56.57	13 16.68	4.35	4.96	13 20 36.61
12	13 10 61.40	59.32	7 32 16.1	3.4	9.245	56.31	13 31.61	4.63	5.04	13 24 33.16
13	13 14 43.54	41.41	7 54 44.6	31.7	9.267	56.05	13 46.04	4.90	5.12	13 28 29.71
14	13 18 26.21	24.04	8 16 66.6	53.6	9.290	55.78	13 59.92	5.17	5.20	13 32 26.27
15	13 22 9.45	7.24	8 39 21.8	8.7	9.313	55.48	14 13.24	5.44	5.28	13 36 22.82
16	13 25 53.27	51.02	9 1 29.7	16.5	9.338	55.17	14 25.99	5.71	5.36	13 40 19.38
17	13 29 37.69	35.40	9 23 30.0	16.7	9.364	54.85	14 38.11	5.97	5.44	13 44 15.93
18	13 33 22.72	20.40	9 45 22.3	8.9	9.390	54.50	14 49.64	6.24	5.53	13 48 12.49
19	13 37 8.40	6.04	10 6 66.1	52.6	9.417	54.14	15 0.53	6.50	5.62	13 52 9.04
20	13 40 54.73	52.34	10 28 41.1	27.5	9.444	53.77	15 10.76	6.77	5.71	13 56 5.60
21	13 44 41.72	39.30	10 49 67.1	53.4	9.472	53.37	15 20.33	7.03	5.81	14 0 2.15
22	13 48 29.39	26.94	11 11 23.4	9.7	9.501	52.96	15 29.21	7.29	5.91	14 3 58.71
23	13 52 17.76	15.28	11 32 29.6	15.9	9.530	52.54	15 37.41	7.55	6.01	14 7 55.26
24	13 56 6.84	4.33	11 53 25.4	11.7	9.559	52.09	15 44.90	7.82	6.11	14 11 51.82
25	13 59 56.63	54.10	12 13 70.1	56.5	9.590	51.63	15 51.66	8.08	6.22	14 15 48.37
26	14 3 47.15	44.60	12 34 43.6	30.0	9.621	51.15	15 57.71	8.34	6.32	14 19 44.93
27	14 7 38.41	35.84	12 54 65.3	51.8	9.652	50.65	16 3.01	8.60	6.43	14 23 41.48
28	14 11 30.41	27.82	13 15 14.9	1.4	9.683	50.14	16 7.57	8.86	6.54	14 27 38.04
29	14 15 23.16	20.55	13 34 71.9	58.5	9.714	49.60	16 11.39	9.12	6.65	14 31 34.59
30	14 19 16.67	14.04	13 54 55.9	42.6	9.746	49.05	16 14.44	9.38	6.76	14 35 31.15
31	14 23 10.95	8.30	−14 14 26.5	13.4	9.778	−48.49	−16 16.71	16 9.61	1 6.87	14 39 27.70

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract $0^s.18$ from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		Hourly Motion, Mean Noon.		Equation of Time for Apparent Noon,	Semi-diameter at Apparent Noon.	Sidereal Time of Semid: passing Merid..	Sidereal Time of Mean Noon.
1878.	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 1	14 27 6.01	3.35	−14 33 43.3	30.2	9.810	−47.90	−16 18.21	16 9.90	1 6.98	14 43 24.26
2	14 30 61.86	59.19	14 52 45.9	33.0	9.843	47.30	16 18.92	10.14	7.10	14 47 20.81
3	14 34 58.50	55.82	15 11 33.8	21.1	9.876	46.69	16 18.86	10.39	7.22	14 51 17.37
4	14 38 55.93	53.24	15 29 66.7	54.1	9.910	46.05	16 18.00	10.64	7.34	14 55 13.92
5	14 42 54.17	51.48	15 48 24.3	11.8	9.944	45.40	16 16.32	10.89	7.46	14 59 10.48
6	14 46 53.23	50.53	16 6 25.9	13.8	9.978	44.73	16 13.83	11.13	7.58	15 3 7.03
7	14 50 53.11	50.41	16 23 71.5	59.6	10.012	44.05	16 10.51	11.36	7.70	15 7 3.59
8	14 54 53.82	51.12	16 41 40.5	28.8	10.047	43.35	16 6.36	11.60	7.82	15 11 0.14
9	14 58 55.36	52.67	16 58 52.6	41.1	10.082	42.63	16 1.39	11.83	7.94	15 14 56.70
10	15 2 57.75	55.06	17 15 47.2	36.1	10.118	41.90	15 55.57	12.06	8.06	15 18 53.25
11	15 6 61.00	58.32	17 32 24.1	13.2	10.154	41.16	15 48.89	12.28	8.18	15 22 49.81
12	15 11 5.11	2.44	17 48 43.0	32.4	10.190	40.40	15 41.35	12.49	8.30	15 26 46.37
13	15 15 10.07	7.42	18 4 43.3	33.1	10.225	39.62	15 32.94	12.70	8.42	15 30 42.93
14	15 19 15.89	13.25	18 20 24.8	14.9	10.261	38.83	15 23.68	13.91	8.54	15 34 39.48
15	15 23 22.57	19.95	18 35 47.0	37.4	10.296	38.01	15 13.57	13.12	8.65	15 38 36.04
16	15 27 30.12	27.53	18 50 49.6	40.4	10.332	37.19	15 2.59	13.32	8.76	15 42 32.59
17	15 31 38.58	35.97	19 5 32.1	23.2	10.367	36.35	14 50.75	13.52	8.88	15 46 29.15
18	15 35 47.79	45.26	19 19 54.1	45.5	10.402	35.48	14 38.05	13.71	8.99	15 50 25.71
19	15 39 57.89	55.39	19 33 55.3	47.0	10.437	34.60	14 24.51	13.91	9.11	15 54 22.27
20	15 44 8.83	6.36	19 47 35.2	27.2	10.472	33.71	14 10.13	14.10	9.22	15 58 18.82
21	15 48 20.59	18.16	20 0 53.5	45.9	10.506	32.80	13 54.93	14.29	9.33	16 2 15.38
22	15 52 33.17	30.78	20 13 49.8	42.5	10.540	31.88	13 38.92	14.48	9.44	16 6 11.94
23	15 56 46.54	44.19	20 26 23.8	16.9	10.573	30.95	13 22.11	14.66	9.55	16 10 8.50
24	16 0 60.70	58.39	20 38 35.1	28.6	10.605	29.99	13 4.51	14.84	9.65	16 14 5.05
25	16 5 15.62	13.36	20 50 23.4	17.3	10.637	29.03	12 46.15	15.02	9.75	16 18 1.61
26	16 9 31.28	29.07	21 1 48.1	42.3	10.667	28.04	12 27.04	15.19	9.85	16 21 58.16
27	16 13 47.66	45.50	21 12 49.1	43.6	10.697	27.04	12 7.22	15.36	9.95	16 25 54.72
28	16 18 4.75	2.64	21 23 26.0	20.8	10.726	26.03	11 46.71	15.53	10.05	16 29 51.28
29	16 22 22.52	20.47	21 33 38.5	33.7	10.754	25.00	11 25.50	15.69	10.15	16 33 47.84
30	16 26 40.94	38.95	21 43 26.2	21.8	10.781	23.97	11 3.62	15.85	10.24	16 37 44.40
Dec. 1	16 30 60.00	58.07	21 52 49.1	45.0	10.807	22.93	10 41.12	16.01	10.33	16 41 40.96
2	16 35 19.68	17.81	22 1 46.8	43.1	10.832	21.88	10 18.00	16.16	10.42	16 45 37.51
3	16 39 39.96	38.16	22 10 19.0	15.6	10.856	20.81	9 54.27	16.31	10.50	16 49 34.07
4	16 43 60.80	59.07	22 18 25.4	22.3	10.880	19.73	9 29.98	16.45	10.58	16 53 30.63
5	16 48 22.18	20.52	22 26 5.8	3.0	10.902	18.65	9 5.16	16.59	10.65	16 57 27.19
6	16 52 44.09	42.51	22 33 20.0	17.5	10.923	17.55	8 39.82	16.73	10.72	17 1 23.74
7	16 57 6.49	4.99	22 40 7.8	5.6	10.943	16.44	8 13.97	16.86	10.79	17 5 20.30
8	17 1 29.38	27.96	22 46 28.9	27.0	10.963	15.32	7 47.63	16.98	10.85	17 9 16.86
9	17 5 52.72	51.38	22 52 23.2	21.4	10.981	14.20	7 20.84	17.10	10.91	17 13 13.42
10	17 10 16.49	15.23	22 57 50.5	48.9	10.998	13.07	6 53.63	17.20	10.97	17 17 9.98
11	17 14 40.66	39.49	23 2 50.5	49.2	11.014	11.93	6 26.01	17.30	11.02	17 21 6.54
12	17 19 5.22	4.13	23 7 23.1	22.0	11.030	10.79	5 58.01	17.40	11.07	17 25 3.10
13	17 23 30.13	29.12	23 11 28.2	27.3	11.044	9.64	5 29.64	17.50	11.12	17 28 59.66
14	17 27 55.35	54.42	23 15 5.6	4.9	11.058	8.49	5 0.96	17.59	11.16	17 32 56.21
15	17 32 20.86	20.02	23 18 15.3	14.7	11.069	7.32	4 31.99	17.67	11.19	17 36 52.77
16	17 36 46.65	45.90	23 20 56.9	56.5	11.080	6.15	4 2.76	17.74	11.22	17 40 49.33
17	17 41 12.66	12.00	23 23 10.5	10.2	11.089	4.98	3 33.30	17.81	11.24	17 44 45.89
18	17 45 38.87	38.30	23 24 55.9	55.7	11.096	3.91	3 3.65	17.88	11.26	17 48 42.45
19	17 50 5.24	4.77	23 26 13.1	12.9	11.102	2.64	2 33.83	17.94	11.28	17 52 39.01
20	17 54 31.74	31.36	23 27 2.0	1.9	11.106	1.46	2 3.87	18.00	11.29	17 56 35.57
21	17 58 58.31	58.02	23 27 22.6	22.6	11.108	− 0.28	1 33.83	18.06	11.30	18 0 32.13
22	18 3 24.95	24.75	23 27 14.9	14.9	11.109	+ 0.90	1 3.75	18.11	11.30	18 4 28.68
23	18 7 51.58	51.47	23 26 38.9	38.9	11.109	2.08	0 33.65	18.16	11.30	18 8 25.24
24	18 12 18.20	18.18	23 25 34.6	34.6	11.106	3.26	− 0 3.59	18.21	11.29	18 12 21.80
25	18 16 44.74	44.82	23 24 2.0	1.9	11.103	4.44	+ 0 26.40	18 24	11.28	18 16 18.36
26	18 21 11.18	11.35	23 22 1.1	1.0	11.098	5.61	0 56.29	18.28	11.27	18 20 14.92
27	18 25 37.47	37.73	23 19 32.1	31.9	11.091	6.79	1 16.03	18.31	11.25	18 24 11.48
28	18 30 3.59	3.94	23 16 35.0	34.7	11.083	7.96	1 55.59	18.34	11.22	18 28 8.03
29	18 34 29.48	29.92	23 13 9.8	9.4	11.074	9.13	2 24.93	18.36	11.19	18 32 4.59
30	18 38 55.13	55.66	23 9 16.7	16.2	11.062	10.29	2 54.03	18.38	11.16	18 36 1.15
31	18 43 20.49	21.11	23 4 55.9	55.3	11.050	11.45	3 22.84	18.39	11.12	18 39 57.71
32	18 47 45.53	46.24	−23 0 7.4	6.6	11.036	+12.59	+ 3 51.32	16 18.40	1 11.08	18 43 54.27

NOTE.—For *Mean* interval of Semidiameter passing the Meridian, subtract 0ˢ.19 from the Sidereal Interval.

WASHINGTON MERIDIAN.

Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Jan. 1	23 19.23	2.306	71.71		II.	Mar. 1	23 12.21	1.721	62.37		II.
3	0 13.30	2.190	69.93		I.	2	23 52.62	1.653	61.18		II.
4	1 4.09	2.040	67.59		I.	4	0 31.86	1.624	60.68		I.
5	1 51.19	1.888	65.19		I.	5	1 10.89	1.636	60.91		I.
6	2 34.90	1.760	63.13	167 .. 175	I.	6	1 50.71	1.689	61.89		I.
7	3 15.97	1.671	61.68	175 .. 181	I.	7	2 32.29	1.783	63.55	10 .. 18	I.
8	3 55.44	1.626	60.96	180 .. 190	I.	8	3 16.57	1.914	65.78	17 .. 24	I.
9	4 34.38	1.628	61.05	187 .. 3	I.	9	4 4.35	2.071	68.37	24 .. 32	I.
10	5 13.96	1.679	61.97	3 .. 9	I.	10	4 56.03	2.234	70.97	31 .. 38	I.
11	5 55.39	1.783	63.75	8 .. 16	I.	11	5 51.36	2.369	73.05	39 .. 44	I.
12	6 39.92	1.937	66.29	14 .. 23	I.	12	6 49.28	2.443	74.15	45 .. 51	I.
13	7 28.64	2.131	69.34	23 .. 29	I.	13	7 48.08	2.442	74.08	52 .. 58	I.
14	8 22.29	2.341	72.49	29 .. 37	I.	14	8 46.05	2.380	73.09	60 .. 66	I.
15	9 20.71	2.517	75.03	38 .. 44	I.	15	9 42.12	2.292	71.68	67 .. 73	I.
16	10 22.42	2.605	76.28	45 .. 51	I.	16	10 36.14	2.216	70.44	74 .. 82	I.
17	11 24.90	2.579	75.84	52 .. 58	I.	17	11 28.66	2.171	69.74	83 .. 90	I.
18	12 25.54	2.463	74.12	61 .. 67	I.	18	12 20.73	2.177	69.81	91 .. 100	I.
19	13 22.83	2.311	71.87	67 .. 74	II.	19	13 13.49	2.227	70.61	100 .. 110	II.
20	14 16.56	2.173	69.84	74 .. 82	II.	20	14 7.85	2.307	71.88	111 .. 115	II.
21	15 7.50	2.082	68.48	83 .. 90	II.	21	15 4.22	2.388	73.16	116 .. 123	II.
22	15 56.94	2.047	67.98	91 .. 100	II.	22	16 2.17	2.431	73.88	124 .. 132	II.
23	16 46.18	2.065	68.30	99 .. 110	II.	23	17 0.43	2.409	73.62	133 .. 138	II.
24	17 36.41	2.127	69.31	110 .. 115	II.	24	17 57.28	2.316	72.22	139 .. 145	II.
25	18 28.43	2.211	70.61	116 .. 121	II.	25	18 51.21	2.172	70.01	146 .. 153	II.
26	19 22.45	2.287	71.74	122 .. 130	II.	26	19 41.42	2.012	67.44	153 .. 160	II.
27	20 17.89	2.323	72.22	131 .. 137	II.	27	20 27.88	1.864	64.98	159 .. 168	II.
28	21 13.46	2.295	71.72	138 .. 143	II.	28	21 11.11	1.746	62.94	166 .. 175	II.
29	22 7.55	2.203	70.26		II.	29	21 51.98	1.668	61.52	175 .. 181	II.
30	22 58.90	2.071	68.12		II.	30	22 31.48	1.631	60.80		II.
31	23 46.87	1.928	65.78		II.	31	23 10.57	1.633	60.81		II.
Feb. 2	0 31.52	1.798	63.66		I.	Apr. 1	23 50.21	1.677	61.55		II.
3	1 13.41	1.699	62.01		I.	3	0 31.40	1.762	62.98		I.
4	1 53.38	1.638	61.01		I.	4	1 15.04	1.881	65.00		I.
5	2 32.38	1.619	60.74	183 .. 193	I.	5	2 1.88	2.025	67.40		I.
6	3 11.44	1.644	61.25	193 .. 7	I.	6	2 52.29	2.167	69.82	28 .. 36	I.
7	3 51.68	1.716	62.54	6 .. 13	I.	7	3 46.07	2.283	71.79	37 .. 42	I.
8	4 34.17	1.833	64.57	11 .. 20	I.	8	4 42.28	2.350	72.91	43 .. 48	I.
9	5 20.00	1.993	67.21	20 .. 26	I.	9	5 39.37	2.356	72.98	49 .. 57	I.
10	6 10.02	2.179	70.19	26 .. 34	I.	10	6 35.79	2.311	72.18	58 .. 63	I.
11	7 4.56	2.363	72.97	34 .. 40	I.	11	7 30.51	2.238	70.92	64 .. 70	I.
12	8 3.08	2.500	74.97	41 .. 47	I.	12	8 23.27	2.163	69.72	71 .. 77	I.
13	9 3.92	2.550	75.62	49 .. 55	I.	13	9 14.59	2.122	69.00	78 .. 87	I.
14	10 4.80	2.507	74.88	57 .. 63	I.	14	10 5.47	2.127	69.02	86 .. 93	I.
15	11 3.79	2.399	73.25	64 .. 70	I.	15	10 57.06	2.182	69.83	94 .. 104	I.
16	11 59.98	2.280	71.46	71 .. 77	I.	16	11 50.51	2.278	71.29	103 .. 112	I.
17	12 53.53	2.188	70.02	78 .. 87	II	17	12 46.54	2.392	73.01	113 .. 119	II.
18	13 45.34	2.139	69.30	88 .. 93	II.	18	13 45.14	2.483	74.39	121 .. 129	II.
19	14 36.60	2.141	69.39	94 .. 104	II.	19	14 45.20	2.505	74.80	130 .. 135	II.
20	15 28.43	2.185	70.16	105 .. 112	II.	20	15 44.72	2.439	73.88	136 .. 143	II.
21	16 21.69	2.256	71.30	113 .. 119	II.	21	16 41.67	2.297	71.80	144 .. 150	II.
22	17 16.66	2.320	72.33	120 .. 127	II.	22	17 34.67	2.118	69.05	151 .. 156	II.
23	18 12.80	2.351	72.77	128 .. 134	II.	23	18 23.37	1.944	66.28	157 .. 165	II.
24	19 9.04	2.322	72.31	135 .. 141	II.	24	19 8.20	1.799	63.92	163 .. 174	II.
25	20 3.78	2.230	70.87	142 .. 148	II.	25	19 50.06	1.697	62.14	171 .. 179	II.
26	20 55.79	2.099	68.76	148 .. 156	II.	26	20 30.02	1.640	61.08	177 .. 186	II.
27	21 44.44	1.956	66.39	155 .. 162	II.	27	21 9.15	1.629	60.83	183 .. 193	II.
28	22 29.75	1.824	64.17		II.	28	21 48.57	1.663	61.36		II.
29	23 12.21	1.721	62.37		II.	29	22 29.29	1.739	62.62		II.
						30	23 12.36	1.855	64.51		II.
						31	23 58.56	2.000	66.83		II.

NOTE.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 333–336, which are within 30ᵐ of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

WASHINGTON MERIDIAN.

Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	23 12.36	1.855	64.51		II.	July 1	1 13.46	2.361	72.43		I.
2	23 58.56	2.000	66.83		II.	2	2 8.73	2.241	70.65	64 .. 70	I.
3	0 48.42	2.154	69.28		I.	3	3 1.05	2.124	68.91	71 .. 77	I.
4	1 41.79	2.287	71.38		I.	4	3 50.97	2.044	67.71	78 .. 87	I.
5	2 37.80	2.367	72.62		I.	5	4 39.57	2.015	67.30	86 .. 93	I.
6	3 34.86	2.367	72.77	47 .. 53	I.	6	5 28.13	2.042	67.76	93 .. 102	I.
7	4 31.13	2.309	71.90	54 .. 62	I.	7	6 17.99	2.120	68.98	103 .. 112	I.
8	5 25.45	2.214	70.49	63 .. 67	I.	8	7 10.16	2.232	70.69	113 .. 117	I.
9	6 17.43	2.121	69.06	68 .. 75	I.	9	8 5.18	2.351	72.45	118 .. 125	I.
10	7 7.50	2.059	68.04	76 .. 82	I.	10	9 2.71	2.434	73.62	126 .. 133	I.
11	7 57.63	2.044	67.77	83 .. 90	I.	11	10 1.44	2.443	73.70	134 .. 140	I.
12	8 46.04	2.083	68.34	91 .. 100	I.	12	10 59.32	2.365	72.49	141 .. 147	I.
13	9 37.03	2.175	69.69	100 .. 110	I.	13	11 54.44	2.220	70.30	148 .. 154	I.
14	10 30.70	2.302	71.65	111 .. 115	I.	14	12 45.70	2.052	67.66	155 .. 162	II.
15	11 27.55	2.433	73.52	116 .. 123	I.	15	13 32.99	1.892	65.11	162 .. 170	II.
16	12 27.16	2.520	74.80	124 .. 132	II.	16	14 16.74	1.765	63.05	169 .. 177	II.
17	13 27.83	2.517	74.81	134 .. 139	II.	17	14 57.94	1.679	61.67	177 .. 184	II.
18	14 27.26	2.417	73.39	139 .. 144	II.	18	15 37.68	1.640	61.06	182 .. 193	II.
19	15 23.32	2.247	70.90	146 .. 154	II.	19	16 17.04	1.648	61.25	191 .. 6	II.
20	16 14.96	2.057	68.01	155 .. 161	II.	20	16 57.15	1.703	62.23	4 .. 10	II.
21	17 2.20	1.885	65.27	161 .. 168	II.	21	17 39.12	1.802	63.94	11 .. 19	II.
22	17 45.76	1.753	63.07	169 .. 176	II.	22	18 23.98	1.943	66.25	17 .. 25	II.
23	18 26.71	1.668	61.64	176 .. 182	II.	23	19 12.58	2.111	68.84	24 .. 32	II.
24	19 6.21	1.632	61.00	181 .. 192	II.	24	20 5.28	2.278	71.42	31 .. 38	II.
25	19 45.45	1.645	61.18	189 .. 5	II.	25	21 1.63	2.407	73.30	39 .. 44	II.
26	20 25.55	1.705	62.16	4 .. 10	II.	26	22 0.26	2.462	74.04		II.
27	21 7.65	1.810	63.87	10 .. 17	II.	27	22 59.18	2.432	73.54		II.
28	21 52.75	1.955	66.15		II.	28	23 56.55	2.341	72.16		II.
29	22 41.62	2.119	68.72		II.	30	0 51.39	2.230	70.47		I.
30	23 34.40	2.276	71.12		II.	31	1 43.70	2.136	69.06		I.
June 1	0 30.53	2.387	72.79		I.	Aug. 1	2 34.23	2.083	68.29		I.
2	1 28.39	2.418	73.29		I.	2	3 24.09	2.081	68.33	91 .. 100	I.
3	2 25.98	2.368	72.60		I.	3	4 14.52	2.130	69.14	100 .. 110	I.
4	3 21.63	2.264	71.08	59 .. 66	I.	4	5 6 60	2.216	70.50	111 .. 115	I.
5	4 14.56	2.148	69.35	67 .. 73	I.	5	6 0.98	2.315	72.02	116 .. 121	I.
6	5 4.90	2.055	67.92	73 .. 80	I.	6	6 57.57	2.393	73.17	122 .. 132	I.
7	5 53.52	2.006	67.18	80 .. 89	I.	7	7 55.42	2.414	73.44	133 .. 138	I.
8	6 41.62	2.013	67.28	89 .. 94	I.	8	8 52.87	2.359	72.55	139 .. 144	I.
9	7 30.57	2.076	68.23	95 .. 106	I.	9	9 48.15	2.239	70.65	145 .. 152	I.
10	8 21.61	2.185	69.89	105 .. 114	I.	10	10 40.06	2.085	68.20	152 .. 159	I.
11	9 15.65	2.321	71.89	114 .. 120	I.	11	11 28.20	1.930	65.70	159 .. 168	I.
12	10 12.90	2.443	73.66	121 .. 129	I.	12	12 12.88	1.799	63.56	167 .. 175	I.
13	11 12.42	2.501	74.49	130 .. 135	I.	13	12 54.85	1.705	61.99	175 .. 181	II.
14	12 12.26	2.466	73.96	137 .. 143	I.	14	13 35.05	1.652	61.10	180 .. 190	II.
15	13 10.09	2.340	72.11	144 .. 151	II.	15	14 14.48	1.641	60.97	187 .. 3	II.
16	14 4.17	2.163	69.46	151 .. 158	II.	16	14 54.17	1.673	61.58	1 .. 9	II.
17	14 53.86	1.981	66.66	157 .. 166	II	17	15 35.11	1.746	62.91	8 .. 16	II.
18	15 39.47	1.827	64.19	165 .. 174	II.	18	16 18.30	1.859	64.85	14 .. 23	II.
19	16 21.86	1.714	62.36	173 .. 180	II.	19	17 4.58	2.002	67.21	22 .. 28	II.
20	17 2.12	1.650	61.30	178 .. 187	II.	20	17 54.51	2.159	69.68	28 .. 36	II.
21	17 41.45	1.635	61.07	185 .. 2	II.	21	18 48.08	2.300	71.84	37 .. 42	II.
22	18 21.03	1.670	61.67	1 .. 8	II.	22	19 44.53	2.392	73.19	43 .. 48	II.
23	19 2.01	1.753	63.05	7 .. 14	II.	23	20 42.40	2.416	73.44	49 .. 57	II.
24	19 45.51	1.880	65.13	13 .. 21	II.	24	21 39.99	2.373	72.75		II.
25	20 32.52	2.042	67.69	21 .. 27	II.	25	22 36.03	2.294	71.50		II.
26	21 23.63	2.217	70.35		II.	26	23 30.08	2.212	70.22		II.
27	22 18.74	2.367	72.57		II.	28	0 22.42	2.158	69.39		I.
28	23 16.74	2.451	73.77		II.	29	1 13.99	2.148	69.25		I.
30	0 15.70	2.443	73.64		I.	30	2 5.88	2.184	69 86		I.
31	1 13.46	2.361	72.43		I.	31	2 59.11	2.258	71.06	105 .. 114	I.

NOTE.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 333–336, which are within 30^m of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

WASHINGTON MERIDIAN.

Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date. 1878.	Mean Time of Meridian Transit.	Diff. for 1 h. of Long.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Sept. 1	3 54.38	2.348	72.48	114 .. 120	I.	Nov. 1	6 5.59	1.938	66.04	159 .. 168	I.
2	4 51.68	2.420	73.61	121 .. 129	I.	2	6 50.27	1.794	63.64	167 .. 175	I.
3	5 50.15	2.439	73.90	130 .. 135	I.	3	7 32.04	1.696	61.96	175 .. 181	I.
4	6 48.22	2.386	73.09	136 .. 143	I.	4	8 12.04	1.646	61.05	180 .. 190	I.
5	7 44.18	2.268	71.24	144 .. 150	I.	5	8 51.42	1.643	60.93	187 .. 3	I.
6	8 36.79	2.113	68.81	151 .. 157	I.	6	9 31.25	1.683	61.54	1 .. 9	I.
7	9 25.60	1.957	66.26	157 .. 168	I.	7	10 12.49	1.761	62.80	8 .. 16	I.
8	10 10.88	1.822	63.98	164 .. 174	I.	8	10 56.03	1.872	64.59	14 .. 23	I.
9	10 53.34	1.722	62.25	172 .. 179	I.	9	11 42.46	2.000	66.65	22 .. 29	I.
10	11 33.86	1.661	61.18	177 .. 186	I.	10	12 32.01	2.126	68.64	28 .. 36	II.
11	12 13.39	1.641	60.83	183 .. 193	II.	11	13 24.28	2.223	70.19	37 .. 42	II.
12	12 52.92	1.660	61.18	193 .. 7	II.	12	14 18.30	2.267	70.94	42 .. 48	II.
13	13 33.37	1.717	62.21	6 .. 13	II.	13	15 12.63	2.251	70.76	49 .. 57	II.
14	14 15.63	1.810	63.84	11 .. 20	II.	14	16 6.01	2.191	69.90	57 .. 63	II.
15	15 0.48	1.931	65.90	20 .. 26	II.	15	16 57.67	2.114	68.75	63 .. 69	II.
16	15 48.44	2.067	68.14	26 .. 33	II.	16	17 47.55	2.048	67.73	68 .. 77	II.
17	16 39.64	2.196	70.21	33 .. 40	II.	17	18 36.23	2.016	67.22	76 .. 84	II.
18	17 33.59	2.292	71.70	40 .. 46	II.	18	19 24.71	2.033	67.45	83 .. 91	II.
19	18 29.25	2.335	72.34	47 .. 53	II.	19	20 14.24	2.105	68.51	92 .. 100	II.
20	19 25.24	2.322	72.11	54 .. 61	II.	20	21 6.14	2.229	70.37		II.
21	20 20.42	2.272	71.28	62 .. 67	II.	21	22 1.48	2.388	72.70		II.
22	21 14.19	2.211	70.27	68 .. 75	II.	22	23 0.69	2.541	74.88		II.
23	22 6.69	2.168	69.56		II.	24	0 2.95	2.631	76.19		I.
24	22 58.56	2.164	69.47		II.	25	1 6.14	2.611	75.96		I.
25	23 50.89	2.205	70.06		II.	26	2 7.42	2.478	74.10		I.
27	0 44.72	2.288	71.35		I.	27	3 4.59	2.280	71.19	149 .. 156	I.
28	1 40.88	2.396	72.98		I.	28	3 56.76	2.071	68.03	156 .. 164	I.
29	2 39.51	2.487	74.43		I.	29	4 44.19	1.890	65.20	163 .. 174	I.
30	3 39.83	2.525	75.05	128 .. 133	I.	30	5 27.86	1.757	63.03	171 .. 179	I.
Oct. 1	4 40.08	2.479	74.45	134 .. 140	I.	Dec. 1	6 8.96	1.677	61.67	177 .. 186	I.
2	5 38.23	2.355	72.62	141 .. 147	I.	2	6 48.76	1.648	61.13	184 .. 193	I.
3	6 32.77	2.186	70.01	148 .. 154	I.	3	7 28.42	1.665	61.39	193 .. 7	I.
4	7 23.08	2.010	67.23	155 .. 162	I.	4	8 9.04	1.728	62.40	6 .. 13	I.
5	8 9.42	1.858	64.70	162 .. 170	I.	5	8 51.67	1.830	64.03	11 .. 20	I.
6	8 52.54	1.742	62.70	168 .. 177	I.	6	9 37.10	1.960	66.09	20 .. 26	I.
7	9 33.39	1.669	61.40	176 . 184	I.	7	10 25.83	2.100	68.26	26 .. 34	I.
8	10 13.02	1.640	60.82	182 .. 193	I.	8	11 17.75	2.221	70.09	33 .. 40	I.
9	10 52.45	1.652	60.96	191 .. 5	I.	9	12 12.08	2.293	71.19	40 .. 46	I.
10	11 32.61	1.700	61.80	4 .. 14	I.	10	13 7.33	2.298	71.28	47 .. 53	II.
11	12 14.35	1.785	63.23	12 .. 19	II.	11	14 1.94	2.243	70.48	53 .. 61	II.
12	12 58.50	1.898	65.10	17 .. 24	II.	12	14 54.70	2.152	69.15	61 .. 67	II.
13	13 45.53	2.023	67.17	24 .. 32	II	13	15 45.21	2.061	67.79	67 .. 73	II.
14	14 35.53	2.142	69.13	31 .. 38	II.	14	16 33.82	1.997	66.83	74 .. 82	II.
15	15 28.10	2.231	70.58	39 .. 44	II.	15	17 21.40	1.977	66.55	81 .. 90	II.
16	16 22.25	2.271	71.25	45 .. 50	II.	16	18 9.11	2.010	67.09	90 .. 96	II.
17	17 16.71	2.258	71.09	51 .. 57	II.	17	18 58.31	2.100	68.47	95 .. 106	II.
18	18 10.38	2.210	70.33	58 .. 64	II.	18	19 50.25	2.237	70.54	107 .. 115	II.
19	19 2.69	2.150	69.40	65 .. 71	II.	19	20 45.82	2.397	72.89	116 .. 121	II.
20	19 53.71	2.107	68.67	71 .. 78	II.	20	21 45.10	2.535	74.85		II.
21	20 44.09	2.099	68.49	78 .. 87	II.	21	22 46.90	2.595	75.68		II.
22	21 34.85	2.140	69.06		II.	22	23 48.86	2.546	74.95		II.
23	22 27.18	2.230	70.41		II.	24	0 48.37	2.398	72.79		I.
24	23 22.19	2.359	72.31		II.	25	1 43.61	2.203	69.86		I.
26	0 20.46	2.496	74.35		I.	26	2 34.09	2.008	66.92		I.
27	1 21.67	2.592	75.79		I.	27	3 20.26	1.848	64.40	167 .. 176	I.
28	2 24.21	2.599	75.95		I.	28	4 3.19	1.737	62.57	175 .. 182	I.
29	3 25.62	2.499	74.56	139 .. 144	I.	29	4 44.05	1.676	61.58	181 .. 192	I.
30	4 23.60	2.324	72.02	145 .. 152	I.	30	5 24.04	1.664	61.43	189 .. 5	I.
31	5 16.95	2.122	68.97	152 .. 160	I.	31	6 4.30	1.699	62.09	4 .. 10	I.
32	6 5.59	1.938	66.04	159 .. 168	I.	32	6 45.96	1.778	63.36	9 .. 17	I.

Note.—The numbers in the columns of Stars indicate those Stars in the Catalogue on pp. 333–336, which are within 30^m of the Moon in right ascension. The nearest in declination, if sufficiently bright to be observed, are preferable.

MEAN PLACES FOR 1878.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
1	* 36 Piscium . . .	6	0 10 17.96	+3.077	+ 7 33 47.1	+20.03
2	B. A. C. 57 . .	6.7	0 11 31.25	3.061	1 0 36.5	20.02
3	*d* Piscium . . .	6.7	0 14 19.30	3.086	7 30 46.5	20.06
4	* B. A. C. 113 . .	6.7	0 23 52.40	3.083	4 11 6.7	19.94
5	51 Piscium . . .	6	0 26 6.15	3.088	6 16 59.3	20.00
6	58 Piscium . . .	5	0 39 39.58	+3.122	+11 18 32.8	+19.80
7	δ Piscium . . .	4.5	0 42 21.21	3.109	6 55 15.8	19.71
8	ε PISCIUM . . .	4	0 56 36.75	3.109	7 13 58.9	19.47
9	75 Piscium . . .	6	1 0 8.69	3.150	12 18 11.4	19.45
10	* 87 Piscium . . .	6	1 7 38.79	3.176	15 29 13.5	19.16
11	η PISCIUM . . .	4.3	1 24 57.32	+3.200	+14 42 59.9	+18.71
12	* B. A. C. 477 . .	6	1 29 18.77	3.232	16 48 29.9	18.55
13	105 Piscium . . .	6	1 33 5.96	3.218	15 47 11.2	18.42
14	4 Arietis	6	1 41 34.00	3.244	16 20 56.9	18.16
15	* γ Arietis (N'n star)	4.3	1 46 50.21	3.279	18 41 41.9	17.82
16	ι Arietis . . .	6	1 50 41.31	+3.264	+17 13 16.5	+17.72
17	α ARIETIS	2	2 0 17.90	3.370	22 53 5.7	17.22
18	* 15 Arietis . . .	6.5	2 3 51.97	3.314	18 55 25.3	17.15
19	η Arietis . . .	5.6	2 5 58.33	3.345	20 38 12.3	17.11
20	*6* Arietis . . .	6.5	2 11 20.56	3.329	19 20 10.5	16.88
21	* 26 Arietis . . .	6	2 23 47.97	+3.350	+19 18 45.8	+16.20
22	ν Arietis . . .	6.5	2 31 53.49	3.396	21 25 57.5	15.78
23	μ Arietis . . .	6.5	2 35 29.35	3.372	19 29 27.2	15.61
24	ε Arietis . . .	4.5	2 52 14.36	3.422	20 51 4.8	14.66
25	* 52 Arietis . . .	6.5	2 58 17.45	3.504	24 46 43.4	14.26
26	ζ ARIETIS . . .	4.5	3 7 53.46	+3.438	+20 35 29.1	+13.63
27	* 64 Arietis . . .	6.5	3 17 6.26	3.528	24 17 26.2	13.02
28	* 7 Tauri	6	3 27 13.15	3.541	24 3 12.8	12.36
29	9 Tauri	6	3 29 47.54	3.516	22 48 22.0	12.19
30	17 Tauri	4	3 37 38.08	3.552	23 43 43.4	11.65
31	η TAURI	3	3 40 14.03	+3.555	+23 43 35.8	+11.44
32	* B. A. C. 1192 . .	6	3 42 59.06	3.597	25 12 35.7	11.19
33	* 41 Tauri	5.6	3 59 7.60	3.669	27 16 9.6	10.03
34	*p* Tauri	6	4 3 24.49	3.647	26 9 43.1	9.78
35	φ Tauri	5.6	4 12 51.05	3.677	27 3 29.5	9.00
36	χ^1 Tauri	6.5	4 15 9.64	+3.644	+25 20 21.7	+ 8.82
37	B. A. C. 1408 . .	6	4 27 0.48	3.751	28 42 13.8	7.89
38	B. A. C. 1444 . .	6	4 33 41.79	3.749	28 22 37.1	7.35
39	κ Tauri	6.5	4 50 41.51	3.666	24 51 36.1	5.90
40	* B. A. C. 1562 . .	6.7	4 58 20.13	3.700	26 15 35.9	5.29
41	B. A. C. 1648 . .	6.7	5 13 19.79	+3.763	+27 49 52.5	+ 4.01
42	β TAURI	2	5 18 34.82	3.788	28 30 9.1	3.43
43	* B. A. C. 1746 . .	7	5 28 16.51	3.764	27 34 54.8	2.77
44	* 125 Tauri	6	5 32 10.52	3.716	25 49 37.3	2.41
45	136 Tauri	5	5 45 39.64	3.772	27 34 11.0	1.20
46	139 Tauri	5.6	5 50 25.66	+3.725	+25 56 12.8	+ 0.84
47	* 5 Geminorum . .	6.7	6 4 3.41	3.680	24 26 42.1	− 0.42
48	κ Aurigæ . . .	5.4	6 7 36.32	3.828	29 32 26.6	0.95
49	49 Aurigæ . . .	6.5	6 27 31.11	+3.783	+28 6 55.8	− 2.42

* From a new Catalogue in course of preparation.

MEAN PLACES FOR 1878.0.

No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
50	* B. A. C. 2154	6.7	6 29 58.56	+3.686	+24 41 25.6	− 2.62
51	ε Geminorum	3.4	6 36 25.71	3.699	25 14 59.8	3.19
52	* 37 Geminorum	6.7	6 47 48.41	3.692	25 31 35.4	4.13
53	ω Geminorum	6	6 54 58.80	3.662	24 23 15.4	4.77
54	* 47 Geminorum	6	7 3 49.03	3.727	27 3 18.6	5.56
55	* 52 Geminorum	6.7	7 7 14.24	+3.675	+25 5 42.2	− 5.91
56	δ GEMINORUM	3.4	7 12 50.21	3.591	22 12 19.8	6.26
57	A Geminorum	5.6	7 16 2.34	3.668	25 17 0.4	6.54
58	κ Geminorum	4.3	7 37 4.84	3.631	24 41 20.1	8.29
59	* 84 Geminorum	7	7 45 46.13	3.569	22 38 46.7	8.94
60	* 85 Geminorum	6	7 48 32.58	+3.508	+20 12 16.4	− 9.18
61	ω Cancri	6	7 53 32.98	3.642	25 43 32.1	9.51
62	μ² Cancri	6.5	8 0 35.10	3.541	21 56 11.2	10.09
63	B. A. C. 2788	6	8 13 16.09	3.519	21 7 57.0	10.99
64	η Cancri	6	8 25 39.20	3.482	20 51 15.8	11.93
65	γ Cancri	4.5	8 36 13.49	+3.484	+21 54 23.8	−12.61
66	δ Cancri	4	8 37 45.10	3.421	18 36 5.2	12.97
67	o² Cancri	6	8 50 46.27	3.358	16 4 30.5	13.54
68	* 80 Cancri	7	9 5 5.61	3.377	18 32 34.7	14.49
69	π Cancri	6	9 8 29.67	3.321	15 26 49.6	14.67
70	83 Cancri	6	9 12 10.18	+3.357	+18 13 15.7	−15.07
71	* ξ Leonis	5.6	9 25 22.10	3.239	11 50 21.0	15.74
72	* 7 Leonis	6.7	9 29 12.90	3.288	14 55 21.6	15.90
73	* ψ Leonis	6	9 37 5.22	3.275	14 34 42.9	16.29
74	* B. A. C. 3398	6	9 49 57.96	3.187	9 30 37.8	16.89
75	ν Leonis	5	9 51 39.56	+3.237	+13 1 33.9	−17.00
76	* A Leonis	5.4	10 1 25.72	3.189	10 35 41.5	17.49
77	α LEONIS	1.2	10 1 52.46	3.202	12 33 47.1	17.43
78	44 Leonis	6	10 18 49.16	3.158	9 24 13.0	18.26
79	ρ LEONIS	4	10 26 23.25	3.166	9 56 2.2	18.41
80	* 48 Leonis	6.5	10 28 26.13	+3.135	+ 7 34 52.1	−18.42
81	* 35 Sextantis	6.7	10 37 0.84	3.117	5 23 14.1	18.80
82	* 37 Sextantis	6.7	10 39 44.47	3.128	7 0 56.7	18.88
83	d Leonis	5	10 54 15.60	3.102	6 16 18.4	19.29
84	* c Leonis	5.6	10 54 25.35	3.113	6 45 23.2	19.27
85	* p³ Leonis	6.5	11 0 40.70	+3.060	+ 2 37 2.9	−19.47
86	p⁵ Leonis	5	11 7 31.42	3.085	0 35 37.3	19.58
87	* 75 Leonis	6.5	11 11 0.66	3.088	2 40 51.0	19.77
88	* 79 Leonis	6.5	11 17 46.68	3.080	2 4 36.6	19.74
89	τ LEONIS	5	11 21 39.82	3.088	+ 3 31 41.2	19.78
90	υ LEONIS	5.4	11 30 42.18	+3.072	− 0 9 0.4	−19.84
91	* B. A. C. 4006	6	11 45 48.12	3.068	4 39 18.1	20.01
92	* Piazzi XI. 213	6.7	11 54 47.16	3.072	1 5 6.2	20.05
93	* B. A. C. 4063	6.7	11 57 21.35	3.071	4 47 57.8	20.05
94	* 14 Virginis	6.7	12 13 3.49	3.083	8 14 11.1	20.05
95	B. A. C. 4200	6.7	12 21 35.46	+3.063	− 3 56 43.0	−20.00
96	* B. A. C. 4201	6.7	12 21 41.15	3.090	7 59 56.7	19.96
97	q Virginis	6	12 27 29.04	3.093	8 46 43.3	19.89
98	f Virginis	6	12 30 30.46	+3.086	− 5 9 39.3	−19.96

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No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
99	χ Virginis	5	12 32 57.40	+3.096	− 7 19 24.6	−19.89
100	*28 Virginis	6.7	12 35 39.17	3.097	6 49 44.7	19.85
101	* B. A. C. 4312	6.7	12 45 2.12	3.117	9 40 25.8	19.67
102	ψ Virginis	5	12 48 0.69	3.118	8 52 33.5	19.63
103	49 Virginis	6	13 1 30.47	3.139	10 5 16.5	19.37
104	g Virginis	6	13 2 10.88	+3.123	− 8 19 50.0	−19.33
105	* B. A. C. 4441	6.7	13 11 3.08	3.181	14 54 4.4	19.10
106	*58 Virginis	6.7	13 11 3.76	3.138	9 54 9.9	19.08
107	α VIRGINIS	1	13 18 46.06	3.154	10 31 25.3	18.90
108	* ι Virginis	6	13 20 16.49	3.161	12 4 21.0	18.87
109	69 Virginis	5.6	13 20 56.95	+3.193	−15 20 26.4	−18.87
110	75 Virginis	6	13 26 20.72	3.200	14 44 6.7	18.75
111	83 Virginis	6	13 37 55.10	3.228	15 33 57.9	18.32
112	89 Virginis	5	13 43 14.69	3.250	17 31 33.4	18.10
113	B. A. C. 4700	6	14 4 10.53	3.260	15 43 32.4	17.24
114	B. A. C. 4722	6	14 8 41.29	+3.305	−17 37 48.9	−16.99
115	B. A. C. 4739	6.7	14 11 53.01	3.309	18 8 57.6	16.83
116	B. A. C. 4888	6.7	14 42 15.90	3.453	23 44 33.1	15.24
117	B. A. C. 4896	6.7	14 44 45.55	3.339	17 16 54.5	15.26
118	B. A. C. 4923	6.7	14 50 20.47	3.483	20 51 47.7	16.45
119	γ Scorpii	3.4	14 56 56.06	+3.501	−24 48 4.1	−14.40
120	B. A. C. 4984	6.7	15 2 44.61	3.493	23 31 5.8	14.05
121	B. A. C. 5023	6.7	15 9 18.68	3.458	21 56 51.4	13.69
122	39 Libræ	4.5	15 29 37.21	3.627	27 43 45.7	12.23
123	42 Libræ	6.7	15 33 4.42	3.536	23 25 11.6	12.00
124	b Scorpii	5	15 43 38.60	+3.597	−25 22 43.8	−11.28
125	A^3 Scorpii	5	15 46 17.34	3.592	24 57 40.2	11.07
126	π Scorpii	3	15 51 28.42	3.620	25 45 41.2	10.73
127	δ SCORPII	2.3	15 53 7.28	3.537	22 16 20.3	10.54
128	B. A. C. 5347	6.5	16 0 41.63	3.646	25 59 55.1	10.04
129	c Scorpii	5	16 4 47.88	+3.697	−27 36 27.7	− 9.71
130	σ Scorpii	3.4	16 13 46.12	3.638	25 17 53.0	8.97
131	α SCORPII	1.2	16 21 55.76	3.669	26 9 33.6	8.34
132	τ Scorpii	3.4	16 28 17.51	3.729	27 57 38.8	7.80
133	25 Scorpii	6.7	16 39 23.22	3.670	25 18 19.6	7.15
134	B. A. C. 5709	6	16 52 29.46	+3.665	−24 54 28.8	− 5.99
135	36 Ophiuchi	5	17 7 50.81	3.685	26 25 17.9	5.66
136	θ Ophiuchi	3.4	17 14 31.13	3.682	24 52 33.5	4.00
137	43 Ophiuchi	6.7	17 15 41.03	3.772	28 1 20.1	3.86
138	d Ophiuchi	5	17 19 33.73	3.821	29 45 19.1	3.72
139	3 Sagittarii	5	17 39 52.60	+3.768	−27 46 56.0	− 1.76
140	B. A. C. 6063	6.7	17 48 59.59	3.783	28 2 38.2	0.97
141	γ^1 Sagittarii	Var.	17 57 13.77	3.840	29 35 1.7	0.32
142	B. A. C. 6127	6.5	18 0 21.34	3.795	28 28 8.9	− 0.08
143	B. A. C. 6194	6	18 10 25.24	3.759	27 5 8.1	+ 0.85
144	λ Sagittarii	3	18 20 26.54	+3.706	−25 29 15.7	+ 1.56
145	φ Sagittarii	4.3	18 38 2.18	3.756	27 6 53.0	3.28
146	σ SAGITTARII	2.3	18 47 42.01	3.723	26 26 45.6	4.08
147	B. A. C. 6490	6.7	18 55 59.60	+3.676	−25 0 47.0	+ 4.47

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No.	Name.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
148	τ Sagittarii	4.3	18 59 19.37	+3.753	−27 50 47.2	+ 4.91
149	B. A. C. 6562	6.7	19 5 42.73	3.691	26 6 33.5	5.52
150	ψ Sagittarii	6	19 8 3.64	3.690	25 27 51.0	5.88
151	χ^1 Sagittarii	6	19 17 50.88	3.662	24 44 37.0	6.60
152	*h* Sagittarii	5.4	19 29 16.90	3.660	25 9 2.5	7.62
153	53 Sagittarii	6	19 32 29.50	+3.615	−23 42 11.0	+ 7.99
154	*f* Sagittarii	5	19 39 14.60	3.505	20 3 10.0	8.39
155	B. A. C. 6864	6.7	19 54 8.74	3.574	23 4 15.5	9.52
156	B. A. C. 6889	6.7	19 57 47.30	3.533	21 39 23.1	9.81
157	4 Capricorni	6	20 10 51.30	3.535	22 11 7.2	10.79
158	σ Capricorni	6.5	20 12 21.26	+3.473	−19 29 50.0	+10.98
159	π CAPRICORNI	5	20 20 20.19	3.440	18 36 36.0	11.50
160	B. A. C. 7049	6.7	20 22 21.66	3.527	22 47 40.7	11.63
161	υ Capricorni	6.5	20 33 6.14	3.422	18 33 58.2	12.47
162	B. A. C. 7202	6.7	20 41 29.92	3.414	18 38 55.5	12.99
163	20 Capricorni	6	20 52 40.23	+3.422	−19 30 25.2	+13.67
164	η Capricorni	5.6	20 57 27.57	3.426	20 20 10.1	14.00
165	θ Capricorni	4	20 59 5.31	3.383	17 42 56.6	14.10
166	29 Capricorni	6	21 8 59.56	3.330	15 40 38.4	14.75
167	ι Capricorni	4.5	21 15 27.39	3.353	17 21 6.9	15.16
168	18 Aquarii	6	21 17 31.45	+3.287	−13 24 1.7	+15.29
169	γ Capricorni	4.3	21 33 19.88	3.337	17 12 43.5	16.10
170	42 Capricorni	6.5	21 34 54.71	3.269	14 35 26.6	15.91
171	λ Capricorni	5.6	21 39 57.98	3.237	11 55 40.1	16.44
172	δ Capricorni	3	21 40 18.29	3.319	16 40 46.1	16.20
173	μ CAPRICORNI	5	21 46 38.61	+3.278	−14 7 28.8	+16.79
174	B. A. C. 7620	6	21 47 4.72	3.212	10 53 6.5	16.77
175	e^1 Aquarii	3.6	22 4 1.31	3.205	11 25 11.8	17.59
176	θ AQUARII	4.5	22 10 23.70	3.170	8 23 23.7	17.79
177	σ Aquarii	5.4	22 24 11.32	3.181	11 18 2.5	18.41
178	κ Aquarii	5.6	22 31 26.27	+3.112	− 4 51 24.6	+18.49
179	67 Aquarii	6	22 36 51.84	3.134	7 35 59.3	18.80
180	λ AQUARII	4	22 46 14.87	3.131	8 13 40.9	19.08
181	B. A. C. 7986	6	22 48 51.33	3.111	5 38 14.8	19.08
182	82 Aquarii	6.7	22 56 12.54	3.118	7 13 42.4	19.30
183	φ Aquarii	4.5	23 8 0.30	+3.112	− 6 42 22.1	+19.38
184	B. A. C. 8094	5.6	23 9 17.13	3.092	4 9 28.9	19.57
185	B. A. C. 8152	6.7	23 17 15.87	3.065	− 0 22 47.5	19.62
186	κ Piscium	5.6	23 20 40.70	3.076	+ 0 35 15.8	19.64
187	14 Piscium	6	23 27 52.57	3.084	− 1 55 17.3	19.87
188	16 Piscium	6	23 30 9.78	+3.064	+ 1 25 31.1	+19.99
189	ι Piscium	4.5	23 33 40.55	3.086	4 57 54.1	19.47
190	λ Piscium	5	23 35 49.34	3.064	1 6 32.1	19.81
191	22 Piscium	6.7	23 45 43.21	3.071	2 15 8.7	20.04
192	25 Piscium	6	23 46 49.77	3.070	1 24 47.2	20.04
193	ω PISCIUM	4	23 53 2.83	+3.079	+ 6 11 17.2	+19.94

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	15 24.2	56 25.2	− 1.20	14 54.1	54 34.7	− 0.75	14 48.9	54 15.6	− 0.61
1.5	15 20.2	56 10.8	1.20	14 51.7	54 26.1	0.67	14 47.1	54 9.0	0.49
2.0	15 16.4	55 56.5	1.19	14 49.7	54 18.6	0.58	14 45.7	54 3.8	0.38
2.5	15 12.5	55 42.4	1.16	14 47.9	54 12.1	0.49	14 44.7	53 59.9	0.27
3.0	15 8.8	55 28.7	1.13	14 46.6	54 6.9	0.40	14 43.9	53 57.4	0.16
3.5	15 5.2	55 15.4	1.08	14 45.5	54 2.9	0.28	14 43.6	53 56.2	− 0.05
4.0	15 1.7	55 2.7	1.02	14 44.8	54 0.4	0.15	14 43.6	53 56.1	+ 0.05
4.5	14 58.6	54 50.9	0.95	14 44.5	53 59.3	− 0.02	14 43.9	53 57.4	0.16
5.0	14 55.6	54 40.1	0.86	14 44.7	54 0.0	+ 0.13	14 44.7	54 0.0	0.28
5.5	14 52.9	54 30.5	0.75	14 45.3	54 2.4	0.28	14 45.8	54 4.1	0.40
6.0	14 50.7	54 22.2	0.63	14 46.5	54 6.7	0.45	14 47.3	54 9.6	0.52
6.5	14 48.9	54 15.5	0.49	14 48.2	54 13.1	0.62	14 49.2	54 16.6	0.65
7.0	14 47.5	54 10.5	0.33	14 50.6	54 21.6	0.80	14 51.6	54 25.3	0.79
7.5	14 46.7	54 7.5	− 0.16	14 53.5	54 32.4	0.99	14 54.4	54 35.6	0.94
8.0	14 46.5	54 6.6	+ 0.02	14 57.0	54 45.4	1.18	14 57.7	54 47.8	1.08
8.5	14 46.8	54 8.0	0.22	15 1.2	55 0.8	1.38	15 1.4	55 1.7	1.24
9.0	14 47.9	54 11.8	0.42	15 6.0	55 18.5	1.57	15 5.7	55 17.5	1.40
9.5	14 49.6	54 18.0	0.62	15 11.4	55 38.5	1.76	15 10.6	55 35.2	1.55
10.0	14 51.9	54 26.8	0.74	15 17.5	56 0.6	1.94	15 15.9	55 54.8	1.71
10.5	14 55.1	54 38.2	1.05	15 24.1	56 24.9	2.10	15 21.8	56 16.3	1.86
11.0	14 58.8	54 52.1	1.26	15 31.2	56 51.0	2.24	15 28.1	56 39.5	2.00
11.5	15 3.3	55 8.5	1.37	15 38.7	57 18.6	2.36	15 34.9	57 4.3	2.13
12.0	15 8.5	55 27.3	1.66	15 46.6	57 47.4	2.43	15 41.9	57 30.4	2.23
12.5	15 14.2	55 48.4	1.84	15 54.6	58 16.8	2.46	15 49.4	57 57.7	2.30
13.0	15 20.4	56 11.5	2.00	16 2.6	58 46.2	2.44	15 56.9	58 25.5	2.33
13.5	15 27.2	56 36.3	2.13	16 10.4	59 15.1	2.36	16 4.5	58 53.5	2.33
14.0	15 34.3	57 2.5	2.23	16 18.0	59 42.6	2.22	16 12.1	59 21.1	2.26
14.5	15 41.7	57 29.7	2.29	16 24.9	60 8.1	2.02	16 19.3	59 47.6	2.14
15.0	15 49.3	57 57.2	2.30	16 31.1	60 30.8	1.75	16 26.1	60 12.3	1.96
15.5	15 56.7	58 24.6	2.26	16 36.3	60 50.0	1.44	16 32.0	60 34.4	1.72
16.0	16 4.0	58 51.3	2.17	16 40.4	61 5.1	1.07	16 37.2	60 53.3	1.42
16.5	16 10.8	59 16.5	2.02	16 43.3	61 15.6	0.68	16 41.3	61 8.3	1.07
17.0	16 17.1	59 39.6	1.83	16 44.8	61 21.2	+ 0.26	16 44.7	61 20.9	0.68
17.5	16 22.7	60 0.1	1.58	16 45.0	61 21.8	− 0.16	16 45.7	61 24.6	+ 0.27
18.0	16 27.4	60 17.4	1.29	16 43.8	61 17.4	0.57	16 45.9	61 25.3	− 0.16
18.5	16 31.1	60 30.9	0.97	16 41.2	61 8.1	0.96	16 44.7	61 20.8	0.58
19.0	16 33.7	60 40.5	0.63	16 37.5	60 54.5	1.31	16 42.1	61 11.4	0.99
19.5	16 35.2	60 45.9	+ 0.27	16 32.8	60 37.0	1.61	16 38.3	60 57.3	1.36
20.0	16 35.5	60 47.0	− 0.08	16 27.1	60 16.2	1.86	16 33.3	60 39.1	1.68
20.5	16 34.7	60 43.9	0.42	16 20.7	59 52.8	2.04	16 27.4	60 17.2	1.95
21.0	16 32.8	60 37.0	0.74	16 13.8	59 27.5	2.17	16 20.6	59 52.5	2.16
21.5	16 29.9	60 26.4	1.01	16 6.6	59 1.0	2.24	16 13.3	59 25.5	2.31
22.0	16 26.2	60 12.8	1.25	15 59.3	58 34.0	2.26	16 5.6	58 57.2	2.40
22.5	16 21.8	59 56.6	1.44	15 51.9	58 6.9	2.24	15 57.6	58 28.1	2.43
23.0	16 16.8	59 38.3	1.60	15 44.7	57 40.4	2.18	15 49.7	57 58.9	2.42
23.5	16 11.3	59 18.5	1.70	15 37.7	57 14.7	2.09	15 41.9	57 30.2	2.36
24.0	16 5.7	58 57.7	1.76	15 31.0	56 50.2	1.98	15 34.5	57 2.5	2.26
24.5	15 59.9	58 36.4	1.79	15 24.8	56 27.2	1.86	15 27.1	56 36.1	2.13
25.0	15 54.1	58 14.9	1.78	15 18.9	56 5.7	1.72	15 20.4	56 11.4	1.98
25.5	15 48.3	57 53.7	1.75	15 13.5	55 46.0	1.58	15 14.2	55 48.6	1.82
26.0	15 42.7	57 33.0	1.70	15 8.6	55 27.9	1.43	15 8.6	55 27.8	1.64
26.5	15 37.2	57 13.0	1.63	15 4.2	55 11.6	1.28	15 3.6	55 9.3	1.46
27.0	15 32.0	56 53.8	1.56	15 0.2	54 57.1	1.14	14 59.1	54 52.9	1.27
27.5	15 27.0	56 35.5	1.49	14 56.7	54 44.3	1.00	14 55.2	54 38.8	1.08
28.0	15 22.2	56 18.1	1.41	14 53.7	54 33.1	0.86	14 52.0	54 27.0	0.90
28.5	15 17.8	56 1.7	1.33	14 51.1	54 23.6	0.73	14 49.4	54 17.2	0.72
29.0	15 13.6	55 46.4	1.24	14 48.9	54 15.6	0.61	14 47.3	54 9.6	0.56
29.5	15 9.7	55 32.0	1.16	14 47.1	54 9.0	0.49	14 45.8	54 3.9	0.40
30.0	15 6.1	55 18.6	1.08	14 45.7	54 3.8	−0.38	14 44.7	54 0.1	0.24
30.5	15 2.7	55 6,2	1.00				14 44.1	53 58.1	− 0.10
31.0	14 59.5	54 54.7	0.92		$\Delta s = .272 \Delta \pi$		14 44.0	53 57.7	+ 0.03
31.5	14 56.7	54 44.2	− 0.83				14 44.3	53 58.8	+ 0.15

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d 1.0	14′ 45″.0	54′ 1″.4	+0″.27	14′ 57″.8	54′ 48″.4	+0″.90	15′ 31″.3	56′ 51″.2	+1″.35
1.5	14 46.1	54 5.3	0.38	15 0.9	54 59.7	0.98	15 35.7	57 7.3	1.32
2.0	14 47.5	54 10.4	0.48	15 4.2	55 11.8	1.04	15 39.9	57 22.8	1.27
2.5	14 49.2	54 16.7	0.58	15 7.7	55 24.7	1.10	15 43.9	57 37.7	1.21
3.0	14 51.3	54 24.2	0.68	15 11.4	55 38.2	1.14	15 47.8	57 51.9	1.15
3.5	14 53.7	54 32.9	0.77	15 15.2	55·52.1	1.18	15 51.4	58 5.2	1.07
4.0	14 56.3	54 42.6	0.86	15 19.1	56 6.6	1.22	15 54.8	58 17.6	0.99
4.5	14 59.2	54 53.5	0.95	15 23.2	56 21.4	1.26	15 57.9	58 29.0	0.91
5.0	15 2.5	55 5.5	1.05	15 27.3	56 36.7	1.29	16 0.7	58 39.5	0.83
5.5	15 6.1	55 18.8	1.16	15 31.6	56 52.3	1.31	16 3.4	58 49.0	0.75
6.0	15 10.1	55 33.2	1.26	15 35.9	57 8.2	1.33	16 5.6	58 57.5	0.67
6.5	15 14.3	55 48.9	1.36	15 40.3	57 24.2	1.35	16 7.7	59 5.0	0.58
7.0	15 18.9	56 5.8	1.46	15 44.7	57 40.5	1.36	16 9.4	59 11.5	0.49
7.5	15 23.9	56 23.9	1.55	15 49.2	57 56.9	1.37	16 11.0	59 16.9	0.40
8.0	15 29.0	56 43.1	1.65	15 53.7	58 13.3	1.37	16 12.1	59 21.0	0.29
8.5	15 34.6	57 3.5	1.74	15 58.1	58 29.7	1.35	16 12.8	59 23.8	0.18
9.0	15 40.4	57 24.8	1.82	16 2.4	58 45.7	1.32	16 13.2	59 25.2	+0.05
9.5	15 46.5	57 47.0	1.88	16 6.7	59 1.2	1.27	16 13.2	59 25.1	−0.08
10.0	15 52.7	58 9.8	1.92	16 10.7	59 16.0	1.19	16 12.7	59 23.2	0.23
10.5	15 59.0	58 33.0	1.93	16 14.4	59 29.8	1.09	16 11.7	59 19.6	0.38
11.0	16 5.3	58 56.1	1.91	16 17.8	59 42.1	0.96	16 10.2	59 14.1	0.54
11.5	16 11.4	59 18.7	1.85	16 20.7	59 52.7	0.80	16 8.2	59 6.7	0.70
12.0	16 17.3	59 40.3	1.74	16 22.9	60 1.1	0.60	16 5.6	58 57 2	0.87
12.5	16 22.8	60 0.4	1.59	16 24.6	60 7.0	0.37	16 2.5	58 45.8	1.03
13.0	16 27.7	60 18.3	1.39	16 25.5	60 10.2	+0.14	15 58.8	58 32.5	1.18
13.5	16 31.8	60 33.5	1.14	16 25.5	60 10.3	−0.13	15 54.7	58 17.5	1.32
14.0	16 35.0	60 45.4	0.84	16 24.6	60 7.1	0.40	15 50.3	58 0.9	1.44
14.5	16 37.3	60 53.6	0.51	16 22.8	60 0.7	0.68	15 45.4	57 43.0	1.53
15.0	16 38.4	60 57.7	+0.16	16 20.2	59 50.9	0.94	15 40.2	57 24.1	1.61
15.5	16 38.3	60 57.4	−0.21	16 16.7	59 38.0	1.20	15 34.9	57 4.5	1.65
16.0	16 37.0	60 52.6	0.58	16 12.4	59 22.2	1.43	15 29.5	56 44.6	1.66
16.5	16 34.5	60 43.4	0.94	16 7.4	59 3.8	1.63	15 24.0	56 24.7	1.65
17.0	16 30.9	60 30.1	1.28	16 1.8	58 43.2	1.79	15 18.7	56 5.1	1.60
17.5	16 26 2	60 12.9	1 58	15 55.7	58 20.9	1.92	15 13.6	55 46.4	1.52
18.0	16 20.6	59 52.4	1.83	15 49.3	57 57.4	2.00	15 8.8	55 28.7	1.42
18.5	16 14.2	59 29.1	2.04	15 42.7	57 33.2	2.04	15 4.4	55 12.3	1.30
19.0	16 7.3	59 3.6	2.19	15 36.1	57 8.8	2.03	15 0.4	54 57.6	1.15
19.5	16 0.0	58 36.7	2.29	15 29.5	56 44.6	1.99	14 56.9	54 44.9	0.98
20.0	15 52.5	58 8.9	2.33	15 23.1	56 21 2	1.91	14 54.0	54 34.2	0.80
20.5	15 44.8	57 41.0	2.32	15 17.1	55 59.0	1.79	14 51.6	54 25.8	0.60
21.0	15 37.3	57 13.4	2.27	15 11.4	55 38.3	1.66	14 50.0	54 19.8	0.40
21.5	15 30.0	56 46.6	2.18	15 6.3	55 19.3	1.49	14 49.1	54 16.4	−0.18
22.0	15 23.1	56 21.2	2.06	15 1.6	55 2.5	1.31	14 48.9	54 15.5	+0.03
22.5	15 16.6	55 57.4	1.91	14 57.7	54 47.9	1.12	14 49.4	54 17.2	0.25
23.0	15 10.6	55 35.5	1.73	14 54.4	54 35.7	0.91	14 50.5	54 21.5	0.46
23.5	15 5.3	55 15.8	1.55	14 51.7	54 26.1	0.70	14 52.4	54 28.2	0.67
24.0	15 0.6	54 58.4	1.35	14 49.8	54 18.9	0.49	14 54.8	54 37.5	0.87
24.5	14 56.5	54 43.4	1.15	14 48.6	54 14.4	0.27	14 58.0	54 49.0	1.05
25.0	14 53.1	54 30.9	0.94	14 48.0	54 12.3	−0.06	15 1.7	55 2.7	1.22
25.5	14 50.3	54 20.8	0.74	14 48.1	54 12.8	+0.14	15 6.0	55 18.3	1.37
26.0	14 48.3	54 13.2	0.53	14 48.9	54 15.7	0.34	15 10.6	55 35.5	1.49
26.5	14 46.8	54 8.0	0.34	14 50.4	54 20.9	0.53	15 15.7	55 54.1	1.60
27.0	14 46.0	54 5.1	−0.15	14 52 4	54 28.3	0.70	15 21.1	56 13.8	1.69
27.5	14 45.9	54 4.5	+0.03	14 54.9	54 37.6	0.85	15 26.6	56 34.1	1.73
28.0	14 46.2	54 5.8	0.20	14 57.9	54 48.6	0.99	15 32.3	56 54.9	1.74
28.5	14 47.1	54 9.1	0.35	15 1.3	55 1.2	1.10	15 37.9	57 15.5	1.72
29.0	14 48.5	54 14.1	0.49	15 5.1	55 15.0	1.20	15 43.4	57 35.7	1.67
29.5	14 50.3	54 20.7	0.61	15 9.2	55 29.9	1.28	15 48.7	57 55.1	1.58
30.0	14 52.5	54 28.7	0.72	15 13.4	55 45.6	1.33	15 53.6	58 13.2	1.47
30.5	14 55.0	54 38.0	+0.82	15 17.8	56 1.8	1.37	15 58.2	58 29.9	1.33
31.0	$\Delta s = .272\,\Delta\pi$			15 22.3	56 18.3	1.38	16 2.3	58 44.9	1.18
31.5				15 26.9	56 34.9	+1.38	16 5.8	58 57.9	+1.00

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	16 2.3	58 44.9	+ 1.18	16 27.2	60 16.6	− 0.24	16 16.6	59 37.6	− 1.85
1.5	16 5.8	58 57.9	1.00	16 26.1	60 12.3	0.49	16 10.4	59 15.1	1.95
2.0	16 8.7	59 8.8	0.82	16 24.0	60 5.0	0.72	16 4.1	58 51.6	1.99
2.5	16 11.1	59 17.5	0.63	16 21.3	59 55.1	0.92	15 57.6	58 27.9	2.00
3.0	16 12.9	59 23.9	0.45	16 18.1	59 43.1	1.08	15 51.1	58 4.1	1.98
3.5	16 14.0	59 28.2	0.27	16 14.3	59 29.3	1.21	15 44.7	57 40.8	1.93
4.0	16 14.6	59 30.5	+ 0.10	16 10.2	59 14.1	1.31	15 38.6	57 18.1	1.86
4.5	16 14.7	59 30.8	− 0.06	16 5.8	58 58.0	1.38	15 32.7	56 56.5	1.77
5.0	16 14.3	59 29.3	0.20	16 1.2	58 41.1	1.42	15 27.1	56 35.9	1.67
5.5	16 13.5	59 26.2	0.33	15 56.5	58 23.9	1.44	15 21.8	56 16.5	1.57
6.0	16 12.2	59 21.6	0.45	15 51.7	58 6.5	1.45	15 16.9	55 58.4	1.46
6.5	16 10.6	59 15.7	0.55	15 47.1	57 49.2	1.44	15 12.3	55 41.6	1.35
7.0	16 8.7	59 8.6	0.64	15 42.4	57 32.0	1.42	15 8.1	55 26.1	1.24
7.5	16 6.5	59 0.5	0.72	15 37.8	57 15.1	1.39	15 4.3	55 11.9	1.13
8.0	16 4.0	58 51.5	0.80	15 33.3	56 58.6	1.36	15 0.7	54 59.0	1.02
8.5	16 1.3	58 41.5	0.87	15 28.9	56 42.4	1.33	14 57.6	54 47.4	0.92
9.0	15 58.4	58 30.8	0.94	15 24.6	56 26.7	1.29	14 54.7	54 37.0	0.82
9.5	15 55.3	58 19.2	1.01	15 20.4	56 11.5	1.25	14 52.2	54 27.8	0.71
10.0	15 51.8	58 6.8	1.06	15 16.4	55 56.7	1.21	14 50.0	54 19.8	0.61
10.5	15 48.3	57 53.7	1.12	15 12.5	55 42.5	1.16	14 48.2	54 13.1	0.52
11.0	15 44.6	57 40.0	1.18	15 8.9	55 28.9	1.11	14 46.7	54 7.5	0.42
11.5	15 40.7	57 25.6	1.23	15 5.4	55 16.0	1.05	14 45.5	54 3.1	0.31
12.0	15 36.6	57 10.6	1.27	15 2.0	55 3.8	0.99	14 44.7	54 0.1	0.20
12.5	15 32.4	56 55.2	1.31	14 58.9	54 52.4	0.92	14 44.2	53 58.4	− 0.09
13.0	15 28.1	56 39.4	1.33	14 56.1	54 41.9	0.84	14 44.1	53 58.0	+ 0.03
13.5	15 23.7	56 23.5	1.33	14 53.5	54 32.3	0.75	14 44.5	53 59.2	0.16
14.0	15 19.4	56 7.6	1.33	14 51.2	54 23.9	0.66	14 45.2	54 2.1	0.31
14.5	15 15.1	55 51.8	1.31	14 49.2	54 16.7	0.55	14 46.5	54 6.7	0.46
15.0	15 10.9	55 36.4	1.27	14 47.7	54 11.0	0.42	14 48.2	54 13.1	0.62
15.5	15 6.9	55 21.6	1.21	14 46.5	54 6.8	0.28	14 50.5	54 21.5	0.78
16.0	15 3.1	55 7.6	1.13	14 45.9	54 4.4	− 0.13	14 53.4	54 31.9	0.95
16.5	14 59.5	54 54.6	1.03	14 45.7	54 3.8	+ 0.03	14 56.7	54 44.4	1.13
17.0	14 56.4	54 43.0	0.92	14 46.1	54 5.3	0.21	15 0.7	54 59.1	1.31
17.5	14 53.7	54 32.9	0.78	14 47.1	54 9.0	0.40	15 5.4	55 15.9	1.49
18.0	14 51.4	54 24.6	0.63	14 48.8	54 15.0	0.59	15 10.5	55 34.9	1.67
18.5	14 49.6	54 18.1	0.46	14 51.0	54 23.3	0.79	15 16.3	55 56.0	1.84
19.0	14 48.4	54 13.8	0.27	14 53.9	54 34.0	0.99	15 22.5	56 19.0	2.00
19.5	14 47.9	54 11.8	− 0.08	14 57.5	54 47.2	1.20	15 29.3	56 43.9	2.14
20.0	14 47.9	54 12.1	+ 0.13	15 1.7	55 2.8	1.40	15 36.5	57 10.3	2.26
20.5	14 48.8	54 14.9	0.34	15 6.6	55 20.7	1.60	15 44.0	57 38.0	2.35
21.0	14 50.2	54 20.2	0.55	15 12.2	55 41.0	1.79	15 51.7	58 6.5	2.40
21.5	14 52.3	54 28.1	0.76	15 18.3	56 3.4	1.96	15 59.6	58 35.5	2.41
22.0	14 55.1	54 38.5	0.97	15 24.9	56 27.6	2.10	15 7.5	59 4.2	2.37
22.5	14 58.7	54 51.5	1.18	15 31.9	56 53.5	2.22	16 15.1	59 32.0	2.26
23.0	15 2.8	55 6.8	1.37	15 39.2	57 20.5	2.31	16 22.1	59 58.3	2.10
23.5	15 7.6	55 24.3	1.55	15 46.8	57 48.4	2.36	16 28.7	60 22.2	1.88
24.0	15 13.0	55 43.9	1.71	15 54.5	58 16.6	2.37	16 34.4	60 43.2	1.60
24.5	15 18.8	56 5.4	1.85	16 2.1	58 44.5	2.32	16 39.1	61 0.4	1.27
25.0	15 25.1	56 28.3	1.96	16 9.4	59 11.5	2.21	16 42.7	61 13.3	0.89
25.5	15 31.6	56 52.4	2.04	16 16.4	59 36.8	2.05	16 44.9	61 21.6	0.48
26.0	15 38.3	57 17.1	2.08	16 22.7	59 59.9	1.83	16 45.8	61 24.9	+ 0.06
26.5	15 45.2	57 42.2	2.08	16 28.1	60 20.1	1.57	16 45.3	61 23.1	− 0.36
27.0	15 51.9	58 6.9	2.04	16 32.7	60 36.8	1.25	16 43.4	61 16.2	0.77
27.5	15 58.5	58 30.9	1.95	16 36.1	60 49.5	0.90	16 40.2	61 4.6	1.15
28.0	16 4.5	58 53.5	1.81	16 38.5	60 57.9	0.52	16 35.9	60 48.7	1.49
28.5	16 10.3	59 14.3	1.64	16 39.5	61 1.8	+ 0.14	16 30.6	60 29.0	1.78
29.0	16 15.2	59 32.7	1.42	16 39.3	61 1.2	− 0.25	16 24.4	60 6.3	2.01
29.5	16 19.5	59 48.3	1.18	16 37.9	60 56.1	0.61	16 17.5	59 41.1	2.18
30.0	16 22.9	60 0.8	0.90	16 35.4	60 46.8	0.95	16 10.2	59 14.2	2.29
30.5	16 25.4	60 10.0	0.62	16 31.9	60 33.9	1.24	16 2.6	58 46.4	2.34
31.0	16 26.9	60 15.6	0.33	16 27.5	60 17.6	1.40	$\Delta s = .272\,\Delta\pi$		
31.5	16 27.5	60 17.8	+ 0.04	16 22.3	59 58.6	− 1.70			

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d	′ ″	′ ″	″	′ ″	′ ″	″	′ ″	′ ″	″
1.0	15 55.0	58 18.2	−2.34	15 15.4	55 52.8	−1.88	14 57.2	54 46.0	−1.16
1.5	15 47.4	57 50.3	2.30	15 9.5	55 31.4	1.69	14 53.8	54 33.3	0.95
2.0	15 39.9	57 23.1	2.22	15 4.3	55 12.2	1.50	14 51.0	54 23.2	0.73
2.5	15 32.9	56 57.1	2.11	14 59.7	54 55.4	1.30	14 48.9	54 15.7	0.52
3.0	15 26.2	56 32.5	1.98	14 55.8	54 41.0	1.11	14 47.6	54 10.7	0.31
3.5	15 20.0	56 9.6	1.84	14 52.5	54 28.8	0.92	14 46.9	54 8.2	−0.11
4.0	15 14.2	55 48.5	1.68	14 49.8	54 19.0	0.73	14 46.8	54 8.1	+0.09
4.5	15 9.0	55 29.3	1.52	14 47.8	54 11.4	0.54	14 47.5	54 10.2	0.27
5.0	15 4.3	55 12.0	1.36	14 46.3	54 5.9	0.37	14 48.6	54 14.5	0.44
5.5	15 0.1	54 56.6	1.20	14 45.4	54 2.6	0.20	14 50.3	54 20.7	0.59
6.0	14 56.4	54 43.2	1.04	14 45.0	54 1.2	−0.04	14 52.5	54 28.7	0.73
6.5	14 53.3	54 31.6	0.89	14 45.1	54 1.6	+0.10	14 55.1	54 38.2	0.85
7.0	14 50.7	54 21.9	0.74	14 45.7	54 3.6	0.24	14 58.0	54 49.1	0.96
7.5	14 48.5	54 13.9	0.60	14 46.6	54 7.2	0.36	15 1.3	55 1.1	1.04
8.0	14 46.7	54 7.5	0.46	14 48.0	54 12.2	0.47	15 4.8	55 14.0	1.11
8.5	14 45.4	54 2.8	0.33	14 49.7	54 18.4	0.57	15 8.5	55 27.6	1.16
9.0	14 44.6	53 59.6	0.21	14 51.6	54 25.7	0.66	15 12.3	55 41.7	1.20
9.5	14 44.0	53 57.8	−0.09	14 54.0	54 34.2	0.75	15 16.3	55 56.2	1.22
10.0	14 43.9	53 57.3	+0.02	14 56.5	54 43.6	0.83	15 20.3	56 10.9	1.23
10.5	14 44.1	53 58.1	0.12	14 59.3	54 54.0	0.91	15 24.3	56 25.7	1.23
11.0	14 44.8	54 0.3	0.23	15 2.5	55 5.3	0.98	15 28.3	56 40.3	1.22
11.5	14 45.7	54 3.7	0.34	15 5.7	55 17.5	1.05	15 32.3	56 55.0	1.21
12.0	14 46.9	54 8.4	0.44	15 9.3	55 30.5	1.12	15 36.2	57 9.4	1.19
12.5	14 48.6	54 14.4	0.56	15 13.1	55 44.3	1.19	15 40.0	57 23.5	1.17
13.0	14 50.6	54 21.7	0.67	15 17.1	55 59.0	1.26	15 43.9	57 37.4	1.14
13.5	14 52.9	54 30.5	0.79	15 21.3	56 14.6	1.33	15 47.6	57 50.9	1.12
14.0	14 55.8	54 40.8	0.92	15 25.8	56 31.0	1.40	15 51.2	58 4.2	1.09
14.5	14 59.0	54 52.6	1.05	15 30.5	56 48.2	1.47	15 54.6	58 17.1	1.06
15.0	15 2.6	55 6.0	1.18	15 35.4	57 6.3	1.54	15 58.1	58 29.6	1.03
15.5	15 6.7	55 21.0	1.32	15 40.5	57 25.1	1.59	16 1.3	58 41.7	0.99
16.0	15 11.2	55 37.7	1.46	15 45.8	57 44.5	1.64	16 4.5	58 53.2	0.94
16.5	15 16.3	55 56.0	1.59	15 51.2	58 4.4	1.67	16 7.4	59 4.1	0.87
17.0	15 21.7	56 15.9	1.73	15 56.7	58 24.6	1.69	16 10.2	59 14.1	0.80
17.5	15 27.5	56 37.4	1.85	16 2.2	58 44.8	1.68	16 12.6	59 23.1	0.70
18.0	15 33.8	57 0.3	1.97	16 7.6	59 4.7	1.63	16 14.7	59 30.8	0.58
18.5	15 40.4	57 24.6	2.07	16 12.8	59 23.8	1.56	16 16.4	59 36.9	0.44
19.0	15 47.2	57 49.8	2.14	16 17.8	59 41.9	1.44	16 17.6	59 41.2	0.28
19.5	15 54.3	58 15.8	2.18	16 22.2	59 58.3	1.28	16 18.2	59 43.5	+0.09
20.0	16 1.4	58 42.1	2.19	16 26.1	60 12.6	1.09	16 18.2	59 43.4	−0.11
20.5	16 8.6	59 8.2	2.15	16 29.3	60 24.2	0.84	16 17.4	59 40.7	0.33
21.0	16 15.4	59 33.5	2.06	16 31.6	60 32.7	0.57	16 16.0	59 35.5	0.55
21.5	16 22.0	59 57.5	1.92	16 32.9	60 37.6	+0.26	16 13.8	59 27.5	0.78
22.0	16 28.0	60 19.5	1.73	16 33.3	60 38.9	−0.06	16 10.9	59 16.7	1.00
22.5	16 33.2	60 38.7	1.47	16 32.5	60 36.1	0.40	16 7.3	59 3.4	1.21
23.0	16 37.6	60 54.6	1.17	16 30.6	60 29.2	0.74	16 3.0	58 47.7	1.40
23.5	16 40.8	61 6.6	0.82	16 27.7	60 18.3	1.06	15 58.1	58 29.8	1.57
24.0	16 42.9	61 14.2	0.44	16 23.7	60 3.7	1.36	15 52.8	58 10.2	1.70
24.5	16 43.7	61 17.1	+0.04	16 18.8	59 45.7	1.63	15 47.0	57 49.1	1.80
25.0	16 43.1	61 15.0	−0.38	16 13.1	59 24.8	1.85	15 41.0	57 27.1	1.86
25.5	16 41.2	61 8.0	0.78	16 6.7	59 1.4	2.03	15 34.9	57 4.6	1.88
26.0	16 38.0	60 56.3	1.16	15 59.9	58 36.3	2.15	15 28.8	56 42.1	1.87
26.5	16 33.7	60 40.3	1.51	15 52.7	58 10.0	2.23	15 22.8	56 19.9	1.82
27.0	16 28.2	60 20.4	1.80	15 45.4	57 43.0	2.25	15 17.0	55 58.6	1.73
27.5	16 22.0	59 57.3	2.05	15 38.0	57 16.1	2.23	15 11.4	55 38.5	1.61
28.0	16 14.9	59 31.5	2.24	15 30.9	56 49.8	2.16	15 6.4	55 20.0	1.47
28.5	16 7.4	59 3.8	2.36	15 24.0	56 24.5	2.05	15 1.9	55 3.3	1.31
29.0	15 59.5	58 35.1	2.42	15 17.5	56 0.7	1.91	14 57.6	54 47.7	1.12
29.5	15 51.6	58 5.9	2.43	15 11.5	55 38.7	1.75	14 54.6	54 36.4	0.92
30.0	15 43.8	57 37.0	2.39	15 6.1	55 18.8	1.57	14 51.9	54 26.6	0.71
30.5	15 36.0	57 8.8	2.30	15 1.3	55 1.1	1.37	14 49.9	54 19.3	0.49
31.0	15 28.7	56 41.8	2.19	$\Delta s = .272\,\Delta\pi$			14 48.7	54 14.8	0.27
31.5	15 21.8	56 16.4	−2.04				14 48.1	54 12.8	−0.05

WASHINGTON MEAN TIME.

PHASES.

Month.	New Moon.	First Quarter.	Full Moon.	Last Quarter.	New Moon.	First Quarter.
	d h m	d h m	d h m	d h m	d h m	d h m
January	2 20 55.1	11 1 38.5	18 7 2.9	24 22 41.5		
February	1 15 8.8	9 20 8.7	16 18 8.6	23 10 4.6		
March	3 10 9.3	11 10 53.1	18 3 58.6	24 23 41.8		
April	2 4 6.1	9 21 46.7	16 12 49.1	23 15 25.0		
May	1 19 42.2	9 5 24.3	15 21 23.3	23 8 33.6	31 8 39.5	
June		7 10 46.6	14 6 42.8	22 2 6.8	29 19 22.6	
July		6 15 12.0	13 17 46.6	21 19 7.8	29 4 32.3	
August		4 20 11.2	12 7 8.0	20 10 59.7	27 12 51.3	
September		3 3 17.7	10 22 41.1	19 1 22.2	25 21 2.2	
October		2 13 53.0	10 15 46.1	18 14 1.8	25 5 50.4	
November		1 4 42.5	9 9 25.8	17 0 50.3	23 16 2.5	30 23 29.3
December			9 2 41.7	16 9 55.8	23 4 16.4	30 20 48.8

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	GREATEST LIBRATION.		
	d h	d h	d h	d h m	d h m	d h m
January	7 22.6	19 21.2		14 2 51 N.E.	26 13 33 N.W.	
February	4 18.5	17 12.5		11 9 32 N.E.	23 12 42 N.W.	
March	3 23.4	18 0.7	30 20.9	11 16 19 N.E.	23 23 46 N.W.	
April		15 5.2	27 10.0	8 16 17 S.E.	21 1 36 N.W.	
May		13 6.3	25 3.7	5 21 12 N.E.	19 2 1 N.W.	
June		9 4.8	21 21.6	1 4 17 N.E.	15 15 30 S.W.	28 2 46 N.E.
July		4 7.7	19 16.5		12 10 10 N.W.	25 18 24 N.E.
July		31 13.8				
August	16 9.8	28 16.3			7 18 53 N.W.	22 19 36 N.E.
September	12 20.7	26 1.7			4 3 46 N.W.	20 1 7 N.E.
October	9 22.3	24 13.1		2 4 2 S.W.	18 6 20 S.E.	30 10 30 S.W.
November	6 3.2	21 21.7			15 1 58 S.E.	27 15 41 S.W.
December	3 18.7	19 17.5			11 15 51 S.E.	25 13 49 S.W.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables:

$I =$ the inclination to the ecliptic of the moon's equator $= 1^\circ\ 28'.8$,

$\Omega =$ mean longitude of the moon's ascending node, (see page 248),

$=$ mean longitude of the descending node of the moon's equator,

$C =$ the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc,

i, Δ, Ω', and ☾ are defined on the next page, where their values for the year are given.

λ, β, a', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

$\lambda' =$ the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node, Ω.

$$\left.\begin{aligned} \Delta\lambda &= -0''.57 \sin 2(\Omega - \lambda) \\ a &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \text{See table, page 343.}$$

The libration in latitude $= b = B - \beta$,

" " longitude $= l = \lambda' -$ ☾.

$$\sin C = \sin i\,\frac{\cos(\lambda' + \Delta - \Omega)}{\cos\delta'} = -\sin i\,\frac{\cos(a' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME.

Mean Noon.		MOON'S EQUATOR.			☾ Moon's Mean Longitude.
		i Inclination to the Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascend'g Node on Earth's Equator.	
Jan.	0	22° 16′.0	142° 34′.7	2° 15′.5	240° 54′.6
	10	22 16.5	142 1.4	2 17.2	12 40.5
	20	22 17.0	141 28.0	2 18.9	144 26.3
	30	22 17.5	140 54.7	2 20.6	276 12.1
Feb.	9	22 18.0	140 21.4	2 22.3	47 58.0
	19	22 18.5	139 48.1	2 23.9	179 43.8
March	1	22 19.0	139 14.8	2 25.6	311 29.7
	11	22 19.6	138 41.6	2 27.2	83 15.5
	21	22 20.1	138 8.3	2 28.8	215 1.3
	31	22 20.7	137 35.1	2 30.6	346 47.2
April	10	22 21.3	137 1.8	2 32.0	118 33.0
	20	22 21.8	136 28.6	2 33.5	250 18.8
	30	22 22.4	135 55.4	2 35.1	22 4.7
May	10	22 23.0	135 22.2	2 36.7	153 50.5
	20	22 23.6	134 49.1	2 38.2	285 36.4
	30	22 24.2	134 15.9	2 39.7	57 22.2
June	9	22 24.8	133 42.8	2 41.2	189 8.0
	19	22 25.4	133 9.6	2 42.6	320 53.9
	29	22 26.0	132 36.5	2 44.1	92 39.7
July	9	22 26.6	132 3.4	2 45.5	224 25.6
	19	22 27.2	131 30.3	2 47.0	356 11.4
	29	22 27.8	130 57.3	2 48.4	127 57.2
Aug.	8	22 28.4	130 24.2	2 49.8	259 43.1
	18	22 29.0	129 51.2	2 51.2	31 28.9
	28	22 29.7	129 18.1	2 52.6	163 14.7
Sept.	7	22 30.3	128 45.1	2 54.0	295 0.6
	17	22 30.9	128 12.1	2 55.3	66 46.4
	27	22 31.6	127 39.2	2 56.6	198 32.3
Oct.	7	22 32.2	127 6.2	2 57.9	330 18.1
	17	22 32.8	126 33.2	2 59.1	102 3.9
	27	22 33.5	126 0.3	3 0.4	233 49.8
Nov.	6	22 34.1	125 27.4	3 1.6	5 35.6
	16	22 34.8	124 54.5	3 2.9	137 21.4
	26	22 35.5	124 21.6	3 4.1	269 7.3
Dec.	6	22 36.1	123 48.8	3 5.3	40 53.1
	16	22 36.8	123 16.0	3 6.5	172 39.0
	26	22 37.5	122 43.1	3 7.6	304 24.8
	36	22 38.2	122 10.3	3 8.8	76 10.6

Mean Solar Days.	Motion of ☾.
0.1	1° 19′.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0° 32′.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°.)

☊—λ	Δλ	$\frac{1}{a}$	*B*	☊—λ	☊—λ	Δλ	$\frac{1}{a}$	*B*	☊—λ
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δ λ has the sign of tan (λ—☊)
***a* has the sign of cos (☊—λ)**
***B* has the sign of sin (☊—λ)**

MERCURY, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	19 59 45.51	− 0.203	−20 18 55.8	+44.54	1 1 14.7	19 59 45.20	− 0.305	−20 18 0.5	+44.24
2	19 59 16.56	2.223	20 1 50.7	40.77	2 1 10.2	19 59 13.89	2.315	20 1 3.1	40.44
3	19 57 58.51	4.286	19 46 23.6	36.38	3 1 5.0	19 57 53.82	4.361	19 45 44.3	36.03
4	19 55 50.95	6.337	19 32 48.3	31.49	4 0 58.9	19 55 44.69	6.390	19 32 17.5	31.14
5	19 52 55.03	8.304	19 21 14.8	26.26	5 0 52.0	19 52 47.80	8.330	19 20 52.1	25.94
6	19 49 13.71	10.103	19 11 49.4	20.85	6 0 44.4	19 49 6.21	10.099	19 11 34.1	20.57
7	19 44 52.08	16.652	19 4 34.1	15.45	7 0 36.2	19 44 45.05	11.619	19 4 24.9	15.23
8	19 39 56.98	12.877	18 59 26.4	10.23	8 0 27.3	19 39 51.12	12.817	18 59 21.7	10.07
9	19 34 37.06	13.711	18 56 20.8	6.30	9 0 18.1	19 34 32.92	13.630	18 56 19.2	5.20
10	19 29 2.24	14.115	18 55 9.0	+ 0.76	10 0 8.6	19 29 0.21	14.024	18 55 8.9	+ 0.73
					10 23 59.1	19 23 23.20	13.990	18 55 40.9	− 3.33
11	19 23 22.99	14.081	18 55 40.9	− 3.35	11 23 49.7	19 17 52.03	13.544	18 57 44.9	6.94
12	19 17 49.68	13.626	18 57 46.1	7.01	12 23 40.5	19 12 36.09	12.729	19 1 10.6	10.14
13	19 12 31.93	12.795	19 1 13.9	10.24	13 23 31.7	19 7 43.49	11.611	19 5 48.1	12.93
14	19 7 37.98	11.655	19 5 54.3	13.06	14 23 23.4	19 3 20.68	10.257	19 11 28.2	15.36
15	19 3 14.40	10.277	19 11 37.7	15.50	15 23 15.7	18 5 32.47	8.741	19 18 2.3	17.42
16	18 59 25.99	8.737	19 18 15.3	17.57	16 23 8.6	18 56 21.90	7.129	19 25 21.6	19.13
17	18 56 15.79	7.104	19 25 38.1	19.27	17 23 2.1	18 53 50.55	5.481	19 33 17.6	20.49
18	18 53 45.28	5.438	19 33 37.5	20.62	18 22 56.3	18 51 58.72	3.843	19 41 42.2	21.50
19	18 51 54.66	3.786	19 42 5.1	21.62	19 22 51.2	18 50 45.70	2.250	19 50 27.0	22.16
20	18 50 43.16	2.183	19 50 52.5	22.26	20 22 46.7	18 50 10.12	− 0.728	19 59 23.2	22.49
21	18 50 9.28	− 0.655	19 59 50.8	22.56	21 22 42.8	18 50 10.07	+ 0.709	20 8 23.5	22.48
22	18 50 11.04	+ 0.785	20 8 52.5	22.53	22 22 39.4	18 50 43.38	2.051	20 17 20.0	22.16
23	18 50 46.20	2.128	20 17 49.8	22.18	23 22 36.5	18 51 47.72	3.294	20 26 5.0	21.55
24	18 51 52.36	3.369	20 26 35.0	21.54	24 22 34.1	18 53 20.70	4.439	20 34 31.8	20.65
25	18 53 27.11	4.510	20 35 1.4	20.62	25 22 32.2	18 55 20.00	5.489	20 42 34.0	19.50
26	18 55 28.08	5.556	20 43 2.5	19.44	26 22 30.6	18 57 43.40	6.448	20 50 5.5	18.10
27	18 57 53.05	6.510	20 50 32.4	18.02	27 22 29.4	19 0 28.79	7.322	20 57 1.0	16.49
28	19 0 39.88	7.379	20 57 25.8	16.39	28 22 28.6	19 3 34.22	8.118	21 3 15.4	14.68
29	19 3 46.62	8.170	21 3 37.7	14.57	29 22 28.0	19 6 57.86	8.842	21 8 44.5	12.71
30	19 7 11.45	8.888	21 9 3.9	12.58	30 22 27.7	19 10 38.08	9.499	21 13 24.3	10.57
31	19 10 52.72	9.540	21 13 40.4	10.43	31 22 27.7	19 14 33.37	10.098	21 17 10.7	8.29
Feb. 1	19 14 48.92	10.133	21 17 23.3	8.14	1 22 28.0	19 18 42.35	10.642	21 20 0.8	5.88
2	19 18 58.70	10.672	21 20 9.7	5.72	2 22 28.4	19 23 3.78	11.137	21 21 51.8	3.33
3	19 23 20.80	11.162	21 21 56.8	3.19	3 22 29.0	19 27 36.51	11.586	21 22 41.1	− 0.74
4	19 27 54.10	11.608	21 22 42.1	− 0.57	4 22 29.8	19 32 19.55	11.995	21 22 26.7	+ 1.97
5	19 32 37.60	12.012	21 22 23.6	+ 2.14	5 22 30.8	19 37 11.97	12.367	21 21 6.2	4.75
6	19 37 30.38	12.379	21 20 59.0	4.92	6 22 31.9	19 42 12.91	12.707	21 18 38.2	7.60
7	19 42 31.61	12.717	21 18 26.9	7.77	7 22 33.1	19 47 21.66	13.018	21 15 1.0	10.51
8	19 47 40.55	13.025	21 14 45.6	10.68	8 22 34.4	19 52 37.54	13.302	21 10 13.1	13.49
9	19 52 56.54	13.304	21 9 53.7	13.65	9 22 35.8	19 57 59.92	13.561	21 4 13.4	16.50
10	19 58 18.96	13.561	21 3 50.1	16.66	10 22 37.4	20 3 28.24	13.797	20 57 0.8	19.56
11	20 3 47.26	13.795	20 56 33.7	19.71	11 22 39.0	20 9 1.99	14.013	20 48 34.3	22.65
12	20 9 20.94	14.009	20 48 3.6	22.80	12 22 40.7	20 14 40.74	14.213	20 38 53.2	25.78
13	20 14 59.55	14.206	20 38 19.0	25.92	13 22 42.5	20 20 24.08	14.396	20 27 56.6	28.94
14	20 20 42.71	14.388	20 27 19.1	29.07	14 22 44.3	20 26 11.65	14.565	20 15 44.0	32.11
15	20 26 30.06	14.555	20 15 3.4	32.24	15 22 46.2	20 32 3.11	14.721	20 2 14.9	35.31
16	20 32 21.24	14.709	20 1 31.3	35.43	16 22 48.2	20 37 58.15	14.865	19 47 28.7	38.54
17	20 38 15.96	14.851	19 46 42.4	38.65	17 22 50.2	20 43 56.52	14.997	19 31 24.8	41.78
18	20 44 13.98	14.982	19 30 36.1	41.88	18 22 52.3	20 49 57.95	15.120	19 14 3.0	45.03
19	20 50 15.03	15.104	19 13 12.1	45.12	19 22 54.4	20 56 2.23	15.235	18 55 23.1	48.29
20	20 56 18.91	15.218	18 54 30.2	48.37	20 22 56.6	21 2 9.19	15.343	18 35 24.8	51.56
21	21 2 25.44	15.325	18 34 30.2	51.63	21 22 58.8	21 8 18.66	15.444	18 14 7.9	54.85
22	21 8 34.45	15.424	18 13 11.8	54.90	22 23 1.1	21 14 30.48	15.539	17 51 32.0	58.14
23	21 14 45.78	15.518	17 50 34.8	58.18	23 23 3.3	21 20 44.52	15.629	17 27 37.2	61.43
24	21 20 59.31	15.607	17 26 39.1	61.46	24 23 5.6	21 27 0.66	15.715	17 2 23.7	64.72
25	21 27 14.93	15.693	17 1 24.9	64.74	25 23 8.0	21 33 18.84	15.798	16 35 51.1	68.01
26	21 33 32.58	15.775	16 34 51.9	68.02	26 23 10.4	21 39 38.98	15.879	16 7 59.2	71.31
27	21 39 52.14	15.855	16 7 0.0	71.30	27 23 12.8	21 46 1.02	15.957	15 38 48.4	74.60
28	21 46 13.60	15.932	15 37 49.5	74.58	28 23 15.2	21 52 24.92	16.034	15 8 18.6	77.89
29	21 52 36.90	+16.009	−15 7 20.3	+77.86	29 23 17.7	21 58 50.64	+16.112	−14 36 29.8	+81.17

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	21 52 36.90	+16.009	-15 7 20.3	+ 77.86	1 23 17.7	21 58 50.64	+16.112	-14 36 29.8	+ 81.17
2	21 59 2.01	16.086	14 35 32.4	81.13	2 23 20.2	22 5 18.17	16.188	14 3 22.2	84.46
3	22 5 28.92	16.162	14 2 26.0	84.40	3 23 22.7	22 11 47.53	16.264	13 28 55.9	87.72
4	22 11 57.65	16.237	13 28 1.3	87.65	4 23 25.3	22 18 18.73	16.340	12 53 11.6	90.97
5	22 18 28.20	16.312	12 52 18.8	90.89	5 23 27.9	22 24 51.81	16.417	12 16 9.1	94.22
6	22 25 0.61	16.389	12 15 18.5	94.12	6 23 30.5	22 31 26.79	16.497	11 37 48.9	97.46
7	22 31 34.91	16.469	11 37 0.9	97.34	7 23 33.2	22 38 3.70	16.580	10 58 11.3	100.67
8	22 38 11.12	16.551	10 57 26.2	100.54	8 23 35.9	22 44 42.64	16.666	10 17 16.9	103.86
9	22 44 49.37	16.636	10 16 35.0	103 72	9 23 38.6	22 51 23.67	16.755	9 35 6.2	107.03
10	22 51 29.66	16.724	9 34 27.9	106.87	10 23 41.4	22 58 6.86	16.846	8 51 39.9	110.15
11	22 58 12.11	16.815	8 51 5.6	109.98	11 23 44.2	23 4 52.29	16.941	8 6 59.0	113.24
12	23 4 56.78	16.909	8 6 29.0	113.06	12 23 47.0	23 11 40.04	17.039	7 21 4.5	116.28
13	23 11 43.75	17.006	7 20 39.2	116.08	13 23 49.9	23 18 30.18	17.141	6 33 57.7	119.27
14	23 18 33.10	17.107	6 33 37.5	119.05	14 23 52.8	23 25 22.82	17.245	5 45 40.3	122.17
15	23 25 24.90	17.210	5 45 25.5	121.94	15 23 55.7	23 32 17.97	17.352	4 56 14.0	125.00
16	23 32 19.21	17.316	4 56 5.1	124.75	16 23 58.7	23 39 15.71	17.460	4 5 41.2	127.72
17	23 39 16.08	17.423	4 5 38.5	127.45					
18	23 46 15.54	17.532	3 14 8.4	130.03	18 0 1.8	23 46 16.06	17.570	3 14 4.6	130.31
19	23 53 17.60	17.639	2 21 38.1	132.47	19 0 4.9	23 53 19.03	17.678	2 21 27.4	132.77
20	0 0 22.21	17.744	1 28 11.4	134.72	20 0 8.0	0 0 24.58	17.784	1 27 53.4	135.03
21	0 7 29.28	17.844	- 0 33 52.9	136.78	21 0 11.1	0 7 32.61	17.884	- 0 33 27.4	137.10
22	0 14 38.69	17.938	+ 0 21 12.3	138.61	22 0 14.3	0 14 43.00	17.979	+ 0 21 45.6	138.94
23	0 21 50.26	18.023	1 16 58.2	140.16	23 0 17.6	0 21 55.57	18.065	1 17 39.5	140.49
24	0 29 3.71	18.095	2 13 17.5	141.40	24 0 20.9	0 29 10.03	18.137	2 14 6.9	141.74
25	0 36 18.68	18.149	3 10 2.6	142.29	25 0 24.2	0 36 26.02	18.191	3 11 0.2	142.63
26	0 43 34.69	18.182	4 7 4.1	142.77	26 0 27.5	0 43 43.05	18.224	4 8 9.8	143.10
27	0 50 51.18	18.189	5 4 11.9	142.81	27 0 30.8	0 51 0.56	18.231	5 5 25.5	143.13
28	0 58 7.50	18.166	6 1 15.3	142.38	28 0 34.1	0 58 17.88	18.207	6 2 36.6	142.69
29	1 5 22.85	18.107	6 58 2.1	141.43	29 0 37.4	1 5 34.20	18.146	6 59 30.7	141.72
30	1 12 36.32	18.008	7 54 19.5	139.93	30 0 40.7	1 12 48.59	18.045	7 55 54.9	140.20
31	1 19 46.88	17.864	8 49 54.2	137.86	31 0 43.9	1 20 0.02	17.898	8 51 35.6	138.09
Apr. 1	1 26 53.42	17.672	9 44 32.3	135.22	1 0 47.1	1 27 7.35	17.703	9 46 18.9	135.42
2	1 33 54.74	17.429	10 38 0.1	132.00	2 0 50.1	1 34 9.37	17.456	10 39 50.8	132.15
3	1 40 49.59	17.132	11 30 3.9	128.22	3 0 53.1	1 41 4.82	17.154	11 31 57.7	128.33
4	1 47 36.64	16.780	12 20 30.6	123.91	4 0 56.0	1 47 52.35	16.797	12 22 26.4	123.97
5	1 54 14.57	16.372	13 9 7.6	119.10	5 0 58.7	1 54 30.63	16.384	13 11 4.3	119.11
6	2 0 42.07	15.911	13 55 43.6	113.83	6 1 1.2	2 0 58 34	15.917	13 57 40.0	113.79
7	2 6 57 86	15.396	14 40 8.4	108.17	7 1 3.5	2 7 14.20	15.396	14 42 3.2	108.08
8	2 13 0.67	14.830	15 22 13.0	102.15	8 1 5.6	2 13 16.93	14.823	15 24 4.9	102.01
9	2 18 49.32	14.216	16 1 49.5	95.85	9 1 7.5	2 19 5.33	14.203	16 3 37.3	95.67
10	2 24 22.66	13.556	16 38 51.9	89.31	10 1 9.2	2 24 38.29	13.537	16 40 34.8	89.09
11	2 29 39.67	12.854	17 13 14.7	82.57	11 1 10.6	2 29 54.79	12.829	17 14 51.7	82.31
12	2 34 39.35	12.113	17 44 54.0	75.68	12 1 11.6	2 34 53.81	12.083	17 46 24.2	75.38
13	2 39 20.83	11.338	18 13 46.7	68.69	13 1 12.4	2 39 34.49	11.302	18 15 9.3	68.36
14	2 43 43.28	10.528	18 39 50.4	61.61	14 1 12.8	2 43 56.03	10.488	18 41 5.0	61.26
15	2 47 45.92	9.688	19 3 3.4	54.47	15 1 12.9	2 47 57.67	9.645	19 4 9.3	54.10
16	2 51 28.11	8.823	19 23 24.5	47.28	16 1 12.6	2 51 38.77	8.777	19 24 21.5	46.90
17	2 54 49.25	7.935	19 40 52.9	40.08	17 1 12.0	2 54 58.75	7.887	19 41 40.8	39.70
18	2 57 48.84	7.028	19 55 28.3	32.87	18 1 11.1	2 57 57.14	6.977	19 56 7.0	32.49
19	3 0 26.45	6.105	20 7 10.4	25.64	19 1 9.7	3 0 33.52	6.054	20 7 40.0	25.26
20	3 2 41.79	5.172	20 15 59.3	18.43	20 1 8.0	3 2 47.63	5.121	20 16 20.0	18.06
21	3 4 34.65	4.233	20 21 55.3	11.24	21 1 5.9	3 4 39.28	4.183	20 22 7.5	10.89
22	3 6 4.95	3 293	20 24 58.9	+ 4.07	22 1 3.5	3 6 8.41	3.246	20 25 3.1	+ 3.75
23	3 7 12.77	2.360	20 25 11.0	- 3.05	23 1 0.7	3 7 15.15	2.316	20 25 7.8	- 3.34
24	3 7 58.37	1.443	20 22 33.4	10.08	24 0 57.5	3 7 59.74	1.403	20 22 23.6	10.33
25	3 8 22.19	+ 0.546	20 17 8.3	16.99	25 0 53.9	3 8 22.67	+ 0.512	20 16 52.9	17.20
26	3 8 24.84	- 0.319	20 8 59.0	23.76	26 0 50.0	3 8 24.56	- 0.347	20 8 39.1	23.92
27	3 8 7.19	1.145	19 58 9.5	30.32	27 0 45.8	3 8 6.31	1.166	19 57 46.4	30.43
28	3 7 30.30	1.919	19 44 45.7	36.61	28 0 41.3	3 7 28.98	1.934	19 44 20.5	36.67
29	3 6 35.54	2.634	19 28 54.9	42.56	29 0 36.5	3 6 33.94	2.642	19 28 29.0	42.56
30	3 5 24.43	3.279	18 10 46.2	48.09	30 0 31.3	3 5 22.72	3.280	19 10 21.1	48.03
31	3 3 58.76	- 3.846	+18 50 30.4	- 53.13	31 0 25.9	3 3 57.10	- 3.839	+18 50 7.4	- 53.01

MERCURY, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	3 3 58.76	− 3.846	+18 50 30.4	−53.13	1 0 25.9	3 3 57.10	− 3.839	+18 50 7.4	−53.01
2	3 2 20.53	4.324	18 28 20.5	57.58	2 0 20.3	3 2 19.06	4.313	18 28 1.0	57.41
3	3 0 31.94	4.710	18 4 31.6	61.37	3 0 14.6	3 0 30.79	4.695	18 4 16.6	61.16
4	2 58 35.22	4.999	17 39 20.6	64.42	4 0 8.8	2 58 34.49	4.980	17 39 11.2	64.17
5	2 56 32.81	5.184	17 13 5.6	66.68	5 0 2.8	2 56 32.57	5.163	17 13 2.5	66.41
					5 23 56.8	2 54 27.48	5.244	16 46 10.3	67.79
6	2 54 27.20	5.266	16 46 6.7	68.08	6 23 50.8	2 52 21.65	5.227	16 18 55.1	68.32
7	2 52 20.84	5.248	16 18 44.5	68.61	7 23 44.8	2 50 17.41	5.112	15 51 37.4	68.00
8	2 50 16.10	5.131	15 51 20.1	68.27	8 23 38.9	2 48 17.03	4.905	15 24 38.1	66.81
9	2 48 15.29	4.921	15 24 14.4	67.06	9 23 33.0	2 46 22.65	4.613	14 58 17.0	64.81
10	2 46 20.57	4.625	14 57 47.7	65.02	10 23 27.3	2 44 36.24	4.243	14 32 53.5	62.03
11	2 44 33.92	4.250	14 32 19.6	62.20	11 23 21.8	2 42 59.52	3.806	14 8 45.2	58.56
12	2 42 57.09	3.808	14 8 7.8	58.68	12 23 16.4	2 41 34.04	3.309	13 46 7.7	54.48
13	2 41 31.63	3.305	13 45 28.1	54.54	13 23 11.3	2 40 21.10	2.762	13 25 15.0	49.85
14	2 40 18.85	2.752	13 24 34.4	49.86	14 23 6.4	2 39 21.78	2.175	13 6 18.6	44.79
15	2 39 19.84	2.159	13 5 38.5	44.74	15 23 1.7	2 38 36.98	1.554	12 49 28.3	39.37
16	2 38 35.48	1.533	12 48 50.0	39.27	16 22 57.2	2 38 7.36	0.911	12 34 51.1	33.69
17	2 38 6.42	0.885	12 34 15.9	33.54	17 22 53.1	2 37 53.40	− 0.251	12 22 32.5	27.83
18	2 37 53.13	− 0.220	12 22 1.6	27.63	18 22 49.2	2 37 55.40	+ 0.419	12 12 36.0	21.87
19	2 37 55.92	+ 0.454	12 12 10.3	21.63	10 22 45.6	2 38 13.57	1.095	12 5 3.0	15.89
20	2 38 14.96	1.133	12 4 43.4	15.62	20 22 42.2	2 38 47.96	1.771	11 59 53.5	9.91
21	2 38 50.29	1.811	11 59 40.8	9.61	21 22 39.1	2 39 38.53	2.443	11 57 6.6	− 4.01
22	2 39 41.86	2.485	11 57 1.4	− 3.69	22 22 36.3	2 40 45.14	3.108	11 56 40.0	+ 1.78
23	2 40 49.51	3.152	11 56 42.8	+ 2.12	23 22 33.7	2 42 7.61	3.765	11 58 30.7	7.42
24	2 42 13.06	3.810	11 58 41.7	7.76	24 22 31.4	2 43 45.74	4.412	12 2 34.6	12.87
25	2 43 52.29	4.458	12 2 53.9	13.22	25 22 29.4	2 45 39.27	5.048	12 8 47.0	18.13
26	2 45 46.93	5.094	12 9 14.7	18.48	26 22 27.6	2 47 47.94	5.673	12 17 3.2	23.18
27	2 47 56.72	5.719	12 17 39.2	23.52	27 22 26.1	2 50 11.47	6.287	12 27 17.6	28.00
28	2 50 21.36	6.333	12 28 1.8	28.33	28 22 24.7	2 52 49.62	6.890	12 39 25.0	32.58
29	2 53 0.60	6.935	12 40 17.0	32.90	29 22 23.7	2 55 42.12	7.483	12 53 19.3	36.92
30	2 55 54.17	7.527	12 54 18.8	37.22	30 22 22.8	2 58 48.73	8.067	13 8 54.7	40.99
31	2 59 1.83	8.110	13 10 1.3	41.28	31 22 22.2	3 2 9.26	8.643	13 26 5.2	44.83
June 1	3 2 23.38	8.685	13 27 18.5	45.10	1 22 21.9	3 5 43.55	9.213	13 44 44.9	48.43
2	3 5 58.65	9.253	13 46 4.3	48.67	2 22 21.7	3 9 31.44	9.778	14 4 47.6	51.75
3	3 9 47.49	9.816	14 6 12.5	51.97	3 22 21.8	3 13 32.83	10.338	14 26 7.1	54.83
4	3 13 49.78	10.375	14 27 36.9	55.02	4 22 22.1	3 17 47.63	10.895	14 48 37.4	57.65
5	3 18 5.44	10.930	14 50 11.5	57.81	5 22 22.6	3 22 15.83	11.453	15 12 12.0	60.21
6	3 22 34.44	11.485	15 13 49.8	60.34	6 22 23.4	3 26 57.42	12.012	15 36 45.0	62.50
7	3 27 16.78	13.042	15 38 25.7	62.60	7 22 24.4	3 31 52.42	12.573	16 2 9.7	64.52
8	3 32 12.48	12.601	16 3 52.5	64.59	8 22 25.6	3 37 0.92	13.136	16 28 19.4	66.25
9	3 37 21.61	13.161	16 30 3.7	66.29	9 22 27.0	3 42 23.00	13.703	16 55 7.4	67.70
10	3 42 44.25	13.725	16 56 52.3	67.71	10 22 28.6	3 47 58.78	14.278	17 22 26.4	68.85
11	3 48 20.53	14.297	17 24 11.3	68.83	11 22 30.5	3 53 48.40	14.859	17 50 9.6	69.70
12	3 54 10.56	14.874	17 51 53.5	69.64	12 22 32.6	3 59 52.00	15.444	18 18 9.0	70.20
13	4 0 14.48	15.455	18 19 51.1	70.11	13 22 35.0	4 6 9.74	16.034	18 46 16.4	70.36
14	4 6 32.45	16.041	18 47 55.9	70.24	14 22 37.6	4 12 41.78	16.632	19 14 23.3	70.15
15	4 13 4.61	16.637	19 15 59.5	70.00	15 22 40.4	4 19 28.20	17.237	19 42 20.7	69.57
16	4 19 51.05	17.235	19 43 52.8	69.38	16 22 43.4	4 26 29.14	17.844	20 9 59.1	68.56
17	4 26 51.89	17.836	20 11 26.3	68.34	17 22 46.7	4 33 44.67	18.449	20 37 8.3	67.12
18	4 34 7.16	18.436	20 38 29.9	66.88	18 22 50.3	4 41 14.73	19.054	21 3 37.6	65.24
19	4 41 36.83	19.034	21 4 53.1	64.97	19 22 54.1	4 48 59.21	19.653	21 29 15.8	62.87
20	4 49 20.76	19.626	21 30 24.6	62.58	20 22 58.1	4 56 57.95	20.240	21 53 51.4	60.00
21	4 57 18.78	20.206	21 54 53.0	59.70	21 23 2.3	5 5 10.56	20.808	22 17 12.3	56.63
22	5 5 30.50	20.769	22 18 6.4	56.32	22 23 6.8	5 13 36.53	21.352	22 39 5.8	52.75
23	5 13 55.40	21.307	22 39 52.4	52.43	23 23 11.5	5 22 15.24	21.866	22 59 20.1	48.35
24	5 22 32.85	21.812	22 59 59.0	48.04	24 23 16.4	5 31 6.81	22.340	23 17 42.8	43.45
25	5 31 21.98	22.277	23 18 14.2	43.15	25 23 21.5	5 40 7.20	22.769	23 34 2.0	38.06
26	5 40 21.77	22.698	23 34 26.3	37.78	26 23 26.7	5 49 18.24	23.142	23 48 6.8	32.24
27	5 49 31.03	23.065	23 48 24.5	31.99	27 23 32.1	5 58 37.51	23.453	23 59 46.9	26.03
28	5 58 48.39	23.371	23 59 58.9	25.81	28 23 37.5	6 8 3.46	23.698	24 8 53.8	19.50
29	6 8 12.30	23.611	24 9 1.0	19.32	29 23 43.1	6 17 34.47	23.873	24 15 20.6	12.70
30	6 17 41.17	23.782	24 15 24.1	12.57	30 23 48.7	6 27 8.77	23.974	24 19 1.8	+ 5.72
31	6 27 13.26	+23.881	+24 19 2.9	+ 5.64	31 23 54.3	6 36 44.62	+24.001	+24 19 54.2	− 1.36

MERCURY, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	6 27 13.26	+23.881	+24 19 2.9	+ 5.64	1 23 54.3	6 36 44.62	+24.001	+24 19 54.2	- 1.36
2	6 36 46.87	23.908	24 19 54.1	- 1.38	2 23 59.9	6 46 20.28	23.957	24 17 56.6	8.44
3	6 46 20.28	23.864	24 17 56.6	8.41					
4	6 55 51.81	23.753	24 13 10.8	15.39	4 0 5.5	6 55 54.03	23.844	24 13 9.4	15.47
5	7 5 19.92	23.579	24 5 39.0	22.23	5 0 11.1	7 5 24.30	23.667	24 5 34.9	22.36
6	7 14 43.15	23.348	23 55 25.4	28.87	6 0 16.6	7 14 49.61	23.433	23 55 17.4	29.05
7	7 24 0.23	23.067	23 42 35.4	35.26	7 0 22.0	7 24 8.67	23.147	23 42 22.6	35.48
8	7 33 10.01	22.741	23 27 15.3	41.37	8 0 27.2	7 33 20.32	22.816	23 26 56.5	41.63
9	7 42 11.52	22.379	23 9 32.3	47.16	9 0 32.3	7 42 23.57	22.449	23 9 6.9	47.45
10	7 51 3.99	21.988	22 49 34.6	52.59	10 0 37.2	7 51 17.64	22.052	22 49 2.0	52.90
11	7 59 46.78	21.574	22 27 30.6	57.68	11 0 42.0	8 0 1.89	21.632	22 26 50.2	58.01
12	8 8 19.38	21.141	22 3 28.6	62.42	12 0 46.7	8 8 35.81	21.193	22 2 40.1	62.76
13	8 16 41.46	20.696	21 37 37.5	66.78	13 0 51.1	8 16 59.07	20.742	21 36 40.7	67.13
14	8 24 52.76	20.243	21 10 5.7	70.80	14 0 55.3	8 25 11.39	20.284	21 9 0.4	71.15
15	8 32 53.12	19.787	20 41 1.6	74.48	15 0 59.4	8 33 12.69	19.823	20 39 47.8	74.83
16	8 40 42.50	19.328	20 10 33.2	77.83	16 1 3.3	8 41 2.88	19.359	20 9 11.1	78.17
17	8 48 20.92	18.872	19 38 48.4	80.85	17 1 7.0	8 48 41.98	18.898	19 37 18.1	81.19
18	8 55 48.42	18.420	19 5 54.6	83.58	18 1 10.5	8 56 10.05	18.442	19 4 16.3	83.91
19	9 3 5.14	17.974	18 31 59.0	86.02	19 1 13.8	9 3 27.24	17.992	18 30 13.1	86.33
20	9 10 11.21	17.533	17 57 8.1	88.18	20 1 17.0	9 10 33.69	17.547	17 55 14.9	88.48
21	9 17 6.78	17.101	17 21 28.4	90.09	21 1 20.0	9 17 29.55	17.112	17 19 28.4	90.37
22	9 23 52.10	16.676	16 45 5.9	91.75	22 1 22.8	9 24 15.09	16.684	16 42 59.4	92.01
23	9 30 27.29	16.258	16 8 6.4	93.18	23 1 25.4	9 30 50.42	16.263	16 5 53.8	93.42
24	9 36 52.56	15.849	15 30 35.3	94.38	24 1 27.9	9 37 15.75	15.851	15 28 17.1	94.60
25	9 43 8.11	15.448	14 52 37.8	95.38	25 1 30.2	9 43 31.30	15.447	14 50 14.5	95.58
26	9 49 14.14	15.055	14 14 18.7	96.18	26 1 32.3	9 49 37.27	15.052	14 11 50.7	96.36
27	9 55 10.81	14.666	13 35 42.8	96.78	27 1 34.3	9 55 33.83	14.663	13 33 10.6	96.94
28	10 0 58.27	14.288	12 56 54.5	97.21	28 1 36.2	10 1 21.14	14.281	12 54 18.7	97.35
29	10 6 36.68	13.914	12 17 58.1	97.46	29 1 37.9	10 6 59.35	13.904	12 15 19.2	97.58
30	10 12 6.17	13.545	11 38 57.8	97.54	30 1 39.4	10 12 28.58	13.533	11 36 16.3	97.64
31	10 17 26.84	13.179	10 59 57.7	97.45	31 1 40.8	10 17 48.95	13.166	10 57 14.0	97.53
Aug. 1	10 22 38.78	12.817	10 21 1.6	97.20	1 1 42.1	10 23 0.55	12.802	10 18 16.3	97.25
2	10 27 42.05	12.456	9 42 13.5	96.79	2 1 43.2	10 28 3.43	13.439	9 39 27.2	96.82
3	10 32 36.67	12.096	9 3 37.2	96.22	3 1 44.1	10 32 57.63	12.078	9 0 50.4	96.23
4	10 37 22.66	11.736	8 25 16.6	95.48	4 1 44.9	10 37 43.15	11.716	8 22 29.8	95.47
5	10 41 59.98	11.374	7 47 15.4	94.59	5 1 45.6	10 42 19.96	11.352	7 44 29.0	94.56
6	10 46 28.60	11.010	7 9 37.6	93.53	6 1 46.1	10 46 48.04	10.989	7 6 52.2	93.48
7	10 50 48.42	10.642	6 32 27.1	92.32	7 1 46.5	10 51 7.28	10.617	6 29 43.3	92.24
8	10 54 59.34	10.267	5 55 47.7	90.94	8 1 46.7	10 55 17.58	10.240	5 53 6.0	90.84
9	10 59 1.18	9.885	5 19 43.6	89.37	9 1 46.8	10 59 18.75	9.857	5 17 4.6	89.25
10	11 2 53.76	9.495	4 44 19.1	87.63	10 1 46.7	11 3 10.62	9.465	4 41 43.3	87.49
11	11 6 36.85	9.094	4 9 38.7	85.71	11 1 46.5	11 6 52.96	9.062	4 7 6.7	85.54
12	11 10 10.17	8.681	3 35 46.8	83.58	12 1 46.1	11 10 25.49	8.647	3 33 19.1	83.39
13	11 13 33.40	8.253	3 2 48.5	81.24	13 1 45.5	11 13 47.89	8.217	3 0 25.7	81.02
14	11 16 46.17	7.809	2 30 49.1	78.67	14 1 44.8	11 16 59.78	7.771	2 28 31.8	78.43
15	11 19 48.07	7.346	1 59 54.0	75.87	15 1 43.9	11 20 0.76	7.307	1 57 42.7	75.60
16	11 22 38.63	6.863	1 30 9.2	72.82	16 1 42.7	11 22 50.35	6.822	1 28 4.7	72.53
17	11 25 17.33	6.358	1 1 40.9	69.50	17 1 41.4	11 25 28.05	6.315	0 59 43.6	69.19
18	11 27 43.61	5.828	0 34 35.8	65.88	18 1 39.9	11 27 53.28	5.784	0 32 46.3	65.54
19	11 29 56.86	5.271	+ 0 9 1.4	61.94	19 1 38.2	11 30 5.45	5.225	+ 0 7 20.3	61.58
20	11 31 56.40	4.685	- 0 14 54.5	57.66	20 1 36.2	11 32 3.87	4.638	- 0 16 26.6	57.28
21	11 33 41.50	4.068	0 37 3.5	53.02	21 1 33.9	11 33 47.83	4.018	0 38 26.2	52.62
22	11 35 11.41	3.419	0 57 16.6	48.00	22 1 31.5	11 35 16.59	3.371	0 58 29.5	47.59
23	11 36 25.33	2.736	1 15 24.1	42.56	23 1 28.8	11 36 29.35	2.688	1 16 26.9	42.13
24	11 37 22.45	2.018	1 31 15.8	36.68	24 1 25.8	11 37 25.31	1.970	1 32 8.1	36.24
25	11 38 1.04	1.266	1 44 40.9	30.34	25 1 22.5	11 38 3.65	1.219	1 45 22.4	29.89
26	11 38 22.99	+ 0.482	1 55 28.1	23.52	26 1 18.9	11 38 23.59	+ 0.437	1 55 58.8	23.07
27	11 38 24.85	- 0.332	2 3 25.9	16.22	27 1 15.0	11 38 24.40	- 0.374	2 3 46.0	15.79
28	11 38 6.84	1.173	2 8 22.6	8.43	28 1 10.8	11 38 5.44	1.211	2 8 32.4	- 8.01
29	11 37 28.41	2.033	2 10 7.0	- 0.19	29 1 6.2	11 37 26.15	2.066	2 10 7.0	+ 0.20
30	11 36 20.18	2.904	2 8 28.1	+ 8.50	30 1 1.3	11 36 26.20	2.931	2 8 19.3	8.85
31	11 35 9.01	- 3.776	- 2 3 16.2	+17.55	31 0 56.0	11 35 5.47	- 3.795	- 2 2 59.6	+17.84

MERCURY, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	11 33 28.05	- 4.633	- 1 54 23.5	+ 26.88	1 0 50.4	11 33 24.15	- 4.644	- 1 54 0.8	+ 27.10
2	11 31 26.87	5.459	1 41 44.7	36.37	2 0 44.5	11 31 22.82	5.461	1 41 17.7	36.51
3	11 29 6.44	6.233	1 25 17.8	45.86	3 0 38.2	11 29 2.47	6.225	1 24 48.5	45 91
4	11 26 28.28	6.933	1 5 5.2	55.15	4 0 31.6	11 26 24.62	6.915	1 4 36.0	55.09
5	11 23 34.45	7.535	0 41 14.0	64.02	5 0 24.8	11 23 31.34	7.508	0 40 47.6	63.86
6	11 20 27.60	8.013	- 0 13 57.7	72.20	6 0 17.8	11 20 25.23	7.979	- 0 13 36.4	71.94
7	11 17 11.00	8.344	+ 0 16 23.9	79.43	7 0 10.6	11 17 9.53	8.304	+ 0 16 37.9	79.08
8	11 13 48.46	8.504	0 49 25.1	85.44	8 0 3.3	11 13 47.99	8.462	0 49 29.8	85.02
					8 23 56.0	11 10 24.86	8.433	1 24 27.2	89.51
9	11 10 24.29	8.475	1 24 33.2	89.97	9 23 48.7	11 7 4.73	8.210	2 0 53.1	92.35
10	11 7 3.18	8.248	2 1 10.5	92.83	10 23 41.6	11 3 52.39	7.785	2 38 5.9	93.42
11	11 3 49.99	7.816	2 38 34.7	93.88	11 23 34.7	11 0 52.66	7.160	3 15 22.1	92.61
12	11 0 49.63	7.180	3 16 1.4	93.01	12 23 28.1	10 58 10.28	6.341	3 51 56.1	89.92
13	10 58 6.90	6 349	3 52 44.2	90.24	13 23 21.8	10 55 49.68	5.350	4 27 4.1	85.46
14	10 55 46.27	5.343	4 27 58.7	85.67	14 23 15.9	10 53 54.74	4.205	5 0 4.5	79.32
15	10 53 51.66	4.184	5 1 2.9	79.41	15 23 10.4	10 52 28.85	2.934	5 30 19.2	71.67
16	10 52 26.44	2.899	5 31 18.3	71.64	16 23 5.8	10 51 34.64	1.569	5 57 15.0	62.78
17	10 51 33.24	1.521	5 58 11.8	62.62	17 23 1.5	10 51 14.07	- 0.137	6 20 24.5	52.86
18	10 51 13.96	- 0.078	6 21 16.0	52.58	18 22 57.8	10 51 28.32	+ 1.329	6 39 25.9	42.14
19	10 51 29.74	+ 1.396	6 40 9.4	41.76	19 22 54.7	10 52 17.89	2.800	6 54 3.1	30.88
20	10 52 20.99	2.872	6 54 36.4	30.42	20 22 52.2	10 53 42.54	4.249	7 4 5.7	19.29
21	10 53 47.40	4.323	7 4 27.1	18.77	21 22 50.2	10 55 41.47	5.652	7 9 28.3	+ 7.60
22	10 55 48.09	5.725	7 9 36.8	+ 7.04	22 22 48.8	10 58 13.28	6.988	7 10 10.9	- 4.03
23	10 58 21.63	7.057	7 10 5.7	- 4.60	23 22 47.9	11 1 16.19	8.240	7 6 17.0	15.41
24	11 1 26.13	8.303	7 5 58.1	15.97	24 22 47.5	11 4 48.03	9.397	6 57 54.5	26.39
25	11 4 59.42	9.453	6 57 22.3	26.93	25 22 47.5	11 8 46.39	10.449	6 45 14.4	36.86
26	11 8 59.04	10.497	6 44 29.6	37.36	26 22 47.9	11 13 8.71	11.392	6 28 30.3	46.71
27	11 13 22.41	11.431	6 27 34.0	47.16	27 22 48.7	11 17 52.33	12.225	6 7 57.8	55.87
28	11 18 6.86	12.255	6 6 51.3	56.27	28 22 49.8	11 22 54.63	12.949	5 43 54.3	64.30
29	11 23 9.78	12.971	5 42 38.9	64.63	29 22 51.1	11 28 13.05	13.569	5 16 37.9	71.94
30	11 28 28.62	13.582	5 15 15.2	72.21	30 22 52.7	11 33 45.17	14.093	4 46 27.3	78.81
Oct. 1	11 34 0.96	14.098	4 44 58.9	79.02	1 22 54.5	11 39 28.77	14.526	4 13 41.4	84.89
2	11 39 44.61	14.525	4 12 8.7	85.04	2 22 56.5	11 45 21.78	14.878	3 38 38.4	90.23
3	11 45 37.52	14.871	3 37 2.9	90.32	3 22 58.5	11 51 22.34	15.160	3 1 36.2	94.84
4	11 51 37.85	15.148	2 59 59.1	94.88	4 23 0.7	11 57 28.89	15.378	2 22 51.5	98.77
5	11 57 44.08	15.362	2 21 14.0	98.77	5 23 2.9	12 3 30.02	15.542	1 42 40.2	102.07
6	12 3 54.79	15.523	1 41 3.2	102.03	6 23 5.2	12 9 54.56	15.662	1 1 16.6	104.80
7	12 10 8.84	15.640	0 59 41.0	104.72	7 23 7.6	12 16 11.49	15.743	+ 0 18 54.0	106.99
8	12 16 25.23	15.720	+ 0 17 20.6	106.89	8 23 9.9	12 22 30.01	15.795	- 0 24 15.4	108 70
9	12 22 43.17	15.770	- 0 25 46.0	108.58	9 23 12.3	12 28 49.44	15.820	1 8 0.8	109.99
10	12 29 2.00	15.795	1 9 28.1	109.85	10 23 14.7	12 35 9.25	15.827	1 52 12.4	110.90
11	12 35 21.19	15.801	1 53 36.0	110.74	11 23 17.0	12 41 29.04	15.819	2 36 41.5	111.46
12	12 41 40.35	15.793	2 38 1.1	111.29	12 23 19.4	12 47 48.51	15.801	3 21 20.3	111.72
13	12 47 59 18	15.774	3 22 35.7	111.54	13 23 21.8	12 54 7.40	15.772	4 6 1.9	111.70
14	12 54 17.42	15.745	4 7 12.9	111.52	14 23 24.1	13 0 25.53	15.739	4 50 40.2	111.45
15	13 0 34.92	15.713	4 51 46.7	111.26	15 23 26.5	13 6 42.86	15.704	5 35 9.8	110.98
16	13 6 51.62	15.678	5 36 11.7	110.79	16 23 28.8	13 12 59.29	15.666	6 19 26.0	110.32
17	13 13 7.42	15.640	6 20 23.2	110.13	17 23 31.1	13 19 14.85	15.630	7 3 24.2	109.50
18	13 19 22.36	15.604	7 4 16.8	109.31	18 23 33.4	13 25 29.53	15.594	7 47 0.8	108.53
19	13 25 36.43	15.569	7 47 48.8	108.34	19 23 35.7	13 31 43.39	15.561	8 30 12.4	107.42
20	13 31 49.68	15.536	8 30 56.1	107.24	20 23 38.0	13 37 56.50	15.532	9 12 56.4	106.19
21	13 38 2.19	15.507	9 13 35.3	106.01	21 23 40.2	13 44 8.95	15.505	9 55 9.3	104.86
22	13 44 14.05	15.481	9 55 43.8	104.68	22 23 42.5	13 50 20.80	15.483	10 36 49.1	103.43
23	13 50 25.32	15.459	10 37 19.2	103.25	23 23 44.7	13 56 32.21	15.466	11 17 53.3	101.90
24	13 56 36.14	15.442	11 18 19.2	101.73	24 23 47.0	14 2 43.25	15.454	11 58 20.0	100.31
25	14 2 46.60	15.430	11 58 41.8	100.14	25 23 49.2	14 8 54.02	15.445	12 38 7.4	98.63
26	14 8 56.80	15.421	12 38 25.1	98.46	26 23 51.4	14 15 4.65	15.442	13 17 13.4	96.87
27	14 15 6.86	15.418	13 17 27.2	96.71	27 23 53.6	14 21 15.29	15.445	13 55 36.6	95.05
28	14 21 16.92	15.421	13 55 46.7	94.90	28 23 55.9	14 27 26.03	15.451	14 33 15.6	93.18
29	14 27 27.09	15.427	14 33 22.0	93.03	29 23 58.1	14 33 36.96	15.461	15 10 8.6	91.23
30	14 33 37.45	15.437	15 10 11.5	91.09					
31	14 39 48.13	15.452	15 46 13.8	89.09	31 0 0.3	14 39 48.22	15.476	15 46 14.3	89.23
32	14 45 59.20	+15.472	-16 21 27.5	- 87.04	32 0 2.6	14 45 59.87	+15.496	-16 21 31.2	- 87.17

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	14 45 59.20	+15.472	-16 21 27.5	-87.04	1 0 2.6	14 45 59.87	+15.496	-16 21 31.2	-87.17
2	14 52 10.81	15.496	16 55 51.3	84.94	2 0 4.8	14 52 12.06	15.521	16 55 58.1	85.07
3	14 58 23.02	15.523	17 29 24.0	82.78	3 0 7.1	14 58 24.86	15.548	17 29 33.8	82.90
4	15 4 35.92	15.553	18 2 4.3	80.57	4 0 9.4	15 4 38.35	15.578	18 2 16.9	80.69
5	15 10 49.57	15.586	18 33 50.7	78.30	5 0 11.7	15 10 52.60	15.611	18 34 5.9	78.41
6	15 17 4.06	15.622	19 4 42.1	75.98	6 0 14.0	15 17 7.70	15.647	19 4 59.8	76.08
7	15 23 19.45	15.661	19 34 37.1	73.60	7 0 16.3	15 23 23.70	15.687	19 34 57.1	73.69
8	15 29 35.79	15.700	20 3 34.5	71.17	8 0 18.6	15 29 40.67	15.726	20 3 56.6	71.26
9	15 35 53.08	15.741	20 31 33.0	68.69	9 0 21.0	15 35 58.58	15.767	20 31 57.0	68.77
10	15 42 11.38	15.784	20 58 31.2	66.15	10 0 23.3	15 42 17.52	15.810	20 58 56.9	66.22
11	15 48 30.69	15.825	21 24 27.8	63.56	11 0 25.7	15 48 37.47	15.852	21 24 55.0	63.62
12	15 54 50.99	15.866	21 49 21.4	60.90	12 0 28.1	15 54 58.43	15.893	21 49 49.9	60.95
13	16 1 12.25	15.906	22 13 10.5	58.18	13 0 30.5	16 1 20.35	15.934	22 13 40.1	58.22
14	16 7 34.46	15.944	22 35 53.6	55.41	14 0 33.0	16 7 43.22	15.972	22 36 24.0	55.44
15	16 13 57.54	15.978	22 57 29.6	52.58	15 0 35.4	16 14 6.97	16.006	22 58 0.6	52.60
16	16 20 21.40	16.009	23 17 56.9	49.69	16 0 37.9	16 20 31.50	16.037	23 18 28.3	49.70
17	16 26 45.92	16.033	23 37 14.1	46.73	17 0 40.3	16 26 56.70	16.061	23 37 45.5	46.73
18	16 33 10.98	16.053	23 55 19.4	43.71	18 0 42.8	16 33 22.44	16.081	23 55 50.6	43.70
19	16 39 36.40	16.063	24 12 11.6	40.63	19 0 45.3	16 39 48.53	16.091	24 12 42.3	40.60
20	16 46 1.92	16.063	24 27 49.2	37.49	20 0 47.8	16 46 14.71	16.090	24 28 19.1	37.45
21	16 52 27.37	16.054	24 42 10.5	34.28	21 0 50.3	16 52 40.82	16.081	24 42 39.3	34.23
22	16 58 52.42	16.031	24 55 14.3	31.02	22 0 52.8	16 59 6.51	16.057	24 55 41.6	30.95
23	17 5 16.75	15.994	25 6 59.2	27.70	23 0 55.2	17 5 31.46	16.019	25 7 24.7	27.62
24	17 11 39.98	15.938	25 17 23.7	24.33	24 0 57.7	17 11 55.29	15.962	25 17 47.1	24.24
25	17 18 1.64	15.863	25 26 26.5	20.90	25 1 0.1	17 18 17.52	15.886	25 26 47.3	20.79
26	17 24 21.23	15.765	25 34 6.5	17.42	26 1 2.5	17 24 37.64	15.786	25 34 24.5	17.30
27	17 30 38.16	15.641	25 40 22.5	13.91	27 1 4.8	17 30 55.05	15.660	25 40 37.4	13.78
28	17 36 51.76	15.487	25 45 13.7	10.35	28 1 7.1	17 37 9.08	15.503	25 45 25.2	10.20
29	17 43 1.26	15.299	25 48 39.3	6.77	29 1 9.3	17 43 18.94	15.312	25 48 47.0	6.60
30	17 49 5.81	15.073	25 50 38.7	- 3.17	30 1 11.5	17 49 23.75	15.082	25 50 42.4	- 2.99
Dec. 1	17 55 4.40	14.803	25 51 11.5	+ 0.43	1 1 13.5	17 55 22.52	14.808	25 51 10.9	+ 0.61
2	18 0 55.93	14.482	25 50 17.9	4.03	2 1 15.4	18 1 14.12	14.482	25 50 12.7	4.22
3	18 6 39.12	14.106	25 47 58.2	7.61	3 1 17.2	18 6 57.26	14.100	25 47 48.3	7.81
4	18 12 12.51	13.668	25 44 13.1	11.14	4 1 18.8	18 12 30.44	13.656	25 43 58.4	11.34
5	18 17 34.50	13.154	25 39 4.0	14.61	5 1 20.2	18 17 52.06	13.135	25 38 44.4	14.81
6	18 22 43.25	12.560	25 32 32.6	17.99	6 1 21.4	18 23 0.25	12.533	25 32 8.1	18.19
7	18 27 36.67	11.876	25 24 41.3	21.26	7 1 22.3	18 27 52.92	11.840	25 24 12.0	21.46
8	18 32 12.47	11.091	25 15 33.2	24.38	8 1 22.9	18 32 27.76	11.046	25 14 59.3	24.57
9	18 36 28.04	10.190	25 5 12.3	27.32	9 1 23.2	18 36 42.14	10.136	25 4 34.2	27.49
10	18 40 20.58	9.166	24 53 43.3	30.06	10 1 23.2	18 40 33.25	9.101	24 53 1.5	30.21
11	18 43 46.94	8.007	24 41 11.6	32.54	11 1 22.7	18 43 57.92	7.932	24 40 26.7	32.66
12	18 46 43.75	6.703	24 27 43.6	34.74	12 1 21.7	18 46 52.82	6.619	24 26 56.2	34.82
13	18 49 7.47	5.248	24 13 26.4	36.63	13 1 20.0	18 49 14.42	5.156	24 12 37.4	36.68
14	18 50 54.40	3.636	23 58 27.8	38.19	14 1 17.8	18 50 59.07	3.539	23 57 38.2	38.20
15	18 52 0.79	+ 1.873	23 42 56.0	39.41	15 1 15.0	18 52 3.07	+ 1.774	23 42 6.8	39.37
16	18 52 23.19	- 0.028	23 26 59.5	40.25	16 1 11.4	18 52 23.10	- 0.124	23 26 11.6	40.17
17	18 51 58.54	2.043	23 10 46.8	40.75	17 1 7.0	18 51 56.20	2.131	23 10 1.3	40.63
18	18 50 44.53	4.133	22 54 26.1	40.92	18 1 1.8	18 50 40.22	4.206	22 53 44.0	40.76
19	18 48 40.01	6.242	22 38 5.2	40.78	19 0 55.8	18 48 34.17	6.294	22 37 27.3	40.59
20	18 45 45.34	8.298	22 21 51.2	40.35	20 0 48.9	18 45 38.55	8.324	22 21 18.3	40.13
21	18 42 2.80	10.216	22 5 51.0	39.62	21 0 41.3	18 41 55.75	10.211	22 5 23.7	39.38
22	18 37 36.83	11.900	21 50 12.0	38.58	22 0 32.9	18 37 30.29	11.863	21 49 50.8	38.32
23	18 32 34.19	13.257	21 35 1.9	37.19	23 0 23.8	18 32 28.91	13.192	21 34 47.2	36.93
24	18 27 3.74	14.205	21 20 30.5	35.36	24 0 14.4	18 27 0.32	14.120	21 20 22.1	35.11
25	18 21 15.99	14.692	21 6 49.0	33.01	25 0 4.8	18 21 14.81	14.596	21 6 46.4	32.78
					25 23 55.2	18 15 23.58	14.596	20 54 13.2	29.88
26	18 15 22.39	14.692	20 54 10.8	30.07	26 23 45.6	18 9 37.95	14.134	20 42 57.0	26.37
27	18 9 34.51	14.220	20 42 50.6	26.51	27 23 36.1	18 4 8.51	13.257	20 33 11.7	22.30
28	18 4 3.20	13.323	20 33 2.8	22.37	28 23 27.1	17 59 4.44	12.033	20 25 10.2	17.75
29	17 58 57.81	12.074	20 25 0.5	17.75	29 23 18.7	17 54 33.10	10.544	20 19 2.3	12.86
30	17 54 25.80	10.557	20 18 53.5	12.79	30 23 10.8	17 50 39.78	8.876	20 14 54.3	7.80
31	17 50 32.49	8.863	20 14 47.9	7.67	31 23 3.6	17 47 27.82	7.110	20 12 47.6	+ 2.78
32	17 47 21.15	- 7.073	-20 12 45.1	+ 2.58	32 22 57.2	17 44 58.76	- 5.312	-20 12 40.0	- 2.09

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	21 55 41.71	+7.338	-13 3 44.1	-59.19	1 3 10.7	21 56 4.99	+7.309	-13 0 36.0	+59.16
2	22 58 35.70	7.159	12 40 2.4	59.27	2 3 9.6	21 58 58.30	7.129	12 36 55.1	59.23
3	22 1 25.31	6.974	12 16 19.5	59.30	3 3 8.5	22 1 47.19	6.944	12 13 13.2	59.25
4	22 4 10.43	6.785	11 52 36.5	59.27	4 3 7.3	22 4 31.59	6.754	11 49 31.5	59.21
5	22 6 50.94	6.590	11 28 54.9	59.19	5 3 6.0	22 7 11.36	6.558	11 25 51.5	59.12
6	22 9 26.72	6.390	11 5 15.9	59.05	6 3 4.7	22 9 46.38	6.358	11 2 14.3	58.97
7	22 11 57.62	6.184	10 41 41.1	58.85	7 3 3.3	22 12 16.49	6.151	10 38 41.5	58.76
8	22 14 23.50	5.971	10 18 11.8	58.59	8 3 1.8	22 14 41.56	5.937	10 15 14.5	58.49
9	22 16 44.20	5.753	9 54 49.6	58.26	9 3 0.2	22 17 1.44	5.719	9 51 54.8	58.14
10	22 18 59.57	5.527	9 31 35.9	57.88	10 2 58.5	22 19 15.97	5.492	9 28 43.9	57.75
11	22 21 9.43	5.294	9 8 32.4	57.42	11 2 56.7	22 21 24.98	5.259	9 5 43.5	57.28
12	22 23 13.61	5.054	8 45 40.6	56.89	12 2 54.8	22 23 28.29	5.018	8 42 55.0	56.74
13	22 25 11.93	4.806	8 23 2.4	56.29	13 2 52.8	22 25 25.74	4.769	8 20 20.4	56.13
14	22 27 4.23	4.551	8 0 39.3	55.62	14 2 50.7	22 27 17.15	4.514	7 58 1.2	55.45
15	22 28 50.30	4.288	7 38 33.1	54.88	15 2 48.5	22 29 2.31	4.250	7 35 59.1	54.70
16	22 30 29.97	4.017	7 16 45.6	54.07	16 2 46.2	22 30 41.07	3.979	7 14 16.0	53.88
17	22 32 3.04	3.738	6 55 18.7	53.17	17 2 43.8	22 32 13.22	3.699	6 52 53.7	52.97
18	22 33 29.31	3.451	6 34 14.1	52.20	18 2 41.3	22 33 38.55	3.412	6 31 54.0	51.99
19	22 34 48.60	3.155	6 13 34.0	51.14	19 2 38.7	22 34 56.91	3.116	6 11 19.0	50.92
20	22 36 0.69	2.851	5 53 20.2	50.00	20 2 36.0	22 36 8.07	2.812	5 51 10.5	49.77
21	22 37 5.40	2.539	5 33 34.8	48.77	21 2 33.1	22 37 11.85	2.501	5 31 30.6	48.53
22	22 38 2.51	2.219	5 14 20.0	47.45	22 2 30.1	22 38 8.02	2.181	5 12 21.5	47.20
23	22 38 51.85	1.891	4 55 38.0	46.04	23 2 27.0	22 38 56.44	1.854	4 53 45.4	45.79
24	22 39 33.21	1.555	4 37 31.0	44.54	24 2 23.7	22 39 36.89	1.518	4 35 44.5	44.28
25	22 40 6.44	1.212	4 20 1.2	42.93	25 2 20.3	22 40 9.23	1.176	4 18 20.9	42.66
26	22 40 31.32	0.861	4 3 11.1	41.23	26 2 16.8	22 40 33.24	0.826	4 1 37.2	40.96
27	22 40 47.70	0.503	3 47 3.1	39.42	27 2 13.1	22 40 48.78	0.469	3 45 35.8	39.14
28	22 40 55.42	+0.138	3 31 39.8	37.50	28 2 9.3	22 40 55.69	+0.106	3 30 19.1	37.22
29	22 40 54.31	-0.231	3 17 3.8	35.48	29 2 5.3	22 40 53.80	-0.262	3 15 49.8	35.20
30	22 40 44.31	0.605	3 3 17.6	33.36	30 2 1.2	22 40 43.06	0.634	3 2 10.6	33.08
31	22 40 25.27	0.982	2 50 23.7	31.12	31 1 56.9	22 40 23.33	1.009	2 49 23.4	30.85
Feb. 1	22 39 57.17	1.362	2 38 24.7	28.77	1 1 52.5	22 39 54.57	1.386	2 37 31.0	28.50
2	22 39 19.91	1.742	2 27 23.4	26.31	2 1 57.9	22 39 16.71	1.763	2 26 36.3	26.04
3	22 38 33.52	2.123	2 17 22.4	23.74	3 1 43.2	22 38 29.84	2.141	2 16 41.7	23.48
4	22 37 38.01	2.502	2 8 24.4	21.08	4 1 38.3	22 37 33.88	2.517	2 7 49.9	20.83
5	22 36 33.49	2.875	2 0 31.3	18.32	5 1 33.3	22 36 29.00	2.887	2 0 2.8	18.08
6	22 35 20.10	3.240	1 53 45.6	15.47	6 1 28.2	22 35 15.32	3.249	1 53 22.9	15.24
7	22 33 58.06	3.595	1 48 9.1	12.54	7 1 22.9	22 33 53.07	3.600	1 47 51.9	12.33
8	22 32 27.63	3.938	1 43 43.7	9.55	8 1 17.5	22 32 22.53	3.939	1 43 31.5	9.37
9	22 30 49.16	4.266	1 40 30.8	6.50	9 1 11.9	22 30 44.04	4.263	1 40 23.0	6.34
10	22 29 3.03	4.575	1 38 31.7	3.42	10 1 6.2	22 28 57.97	4.568	1 38 27.8	3.28
11	22 27 9.74	4.861	1 37 46.6	+ 0.31	11 1 0.4	22 27 4.84	4.851	1 37 46.1	+ 0.19
12	22 25 9.85	5.123	1 38 16.0	- 2.78	12 0 54.5	22 25 5.20	5.110	1 38 18.4	- 2.88
13	22 23 3.99	5.358	1 39 59.4	5.86	13 0 48.5	22 22 59.66	5.342	1 40 4.1	5.93
14	22 20 52.88	5.561	1 42 55.9	8.87	14 0 42.4	22 20 48.95	5.542	1 43 2.3	8.91
15	22 18 37.32	5.731	1 47 4.2	11.82	15 0 36.2	22 18 33.86	5.709	1 47 11.5	11.82
16	22 16 18.12	5.864	1 52 22.0	14.65	16 0 29.9	22 16 15.19	5.840	1 52 29.4	14.63
17	22 13 56.17	5.960	1 58 47.0	17.39	17 0 23.7	22 13 53.82	5.934	1 58 53.9	17.34
18	22 11 32.38	6.016	2 6 15.9	19.97	18 0 17.4	22 11 30.65	5.989	2 6 21.7	19.90
19	22 9 7.72	6.032	2 14 45.2	22.40	19 0 11.1	22 9 6.62	6.005	2 14 49.3	22.31
20	22 6 43.14	6.008	2 24 10.6	24.65	20 0 4.8	22 6 42.68	5.982	2 24 12.5	24.54
					20 23 58.4	22 4 19.79	5.920	2 34 27.0	26.59
21	22 4 19.63	5.945	2 34 27.7	26.71	21 23 52.1	22 1 58.89	5.818	2 45 27.7	28.41
22	22 1 58.12	5.841	2 45 31.3	28.54	22 23 45.9	21 59 40.88	5.678	2 57 9.7	30.01
23	21 59 39.56	5.699	2 57 16.5	30.15	23 23 39.8	21 57 26.69	5.501	3 9 27.3	31.39
24	21 57 24.87	5.520	3 9 37.6	31.54	24 23 33.7	21 55 17.16	5.290	3 22 15.5	32.54
25	21 55 14.88	5.307	3 22 29.5	32.70	25 23 27.7	21 53 13.06	5.048	3 35 28.5	33.46
26	21 53 10.39	5.062	3 35 46.4	33.62	26 23 21.8	21 51 15.14	4.777	3 49 0.9	34.16
27	21 51 12.13	4.788	3 49 22.6	34.31	27 23 16.0	21 49 24.05	4.480	4 2 47.2	34.63
28	21 49 20.78	4.488	4 3 12.6	34.78	28 23 10.3	21 47 40.34	4.160	4 16 42.8	34.91
29	21 47 36.89	-4.164	- 4 17 11.8	-35.05	29 23 4.8	21 46 4.55	-3.822	- 4 30 42.5	-34.99

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1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	21 47 36.89	-4.164	-4 17 11.8	-35.05	1 23 4.8	21 46 4.55	-3.822	-4 30 42.5	-34.99
2	21 46 1.05	3.821	4 31 14.8	35.11	2 22 59.4	21 44 37.12	3.466	4 44 41.3	34.86
3	21 44 33.66	3.461	4 45 16.6	34.97	3 22 54.2	21 43 18.41	3.095	4 58 34.6	34.53
4	21 43 15.04	3.087	4 59 12.6	34.63	4 22 49.1	21 42 8.72	2.713	5 12 18.4	34.04
5	21 42 5.52	2.702	5 12 58.7	34.12	5 22 44.3	21 41 8.31	2.323	5 25 48.7	33.41
6	21 41 5.38	2.308	5 26 31.0	33.48	6 22 39.6	21 40 17.35	1.927	5 39 1.7	32.64
7	21 40 14.77	1.909	5 39 45.7	32.69	7 22 35.0	21 39 35.92	1.527	5 51 54.2	31.73
8	21 39 33.76	1.507	5 52 39.4	31.76	8 22 30.4	21 39 4.13	1.126	6 4 23.2	30.69
9	21 39 2.46	1.103	6 5 9.2	30.70	9 22 26.0	21 38 41.99	0.723	6 16 26.0	29.52
10	21 38 40.88	0.698	6 17 12.3	29.52	10 22 21.8	21 38 29.45	-0.323	6 27 59.5	28.26
11	21 38 28.95	-0.295	6 28 45.8	28.24	11 22 17.8	21 38 26.48	+0.073	6 39 1.8	26.91
12	21 38 26.64	+0.103	6 39 47.6	26.88	12 22 13.9	21 38 32.96	0.465	6 49 30.8	25.49
13	21 38 33.81	0.496	6 50 15.8	25.44	13 22 10.2	21 38 48.74	0.849	6 59 24.9	24.01
14	21 38 50.32	0.881	7 0 8.7	23.95	14 22 6.7	21 39 13.69	1.226	7 8 42.5	22.46
15	21 39 16.04	1.259	7 9 24.8	22.38	15 22 3.4	21 39 47.59	1.597	7 17 22.5	20.86
16	21 39 50.73	1.630	7 18 2.9	20.77	16 22 0.3	21 40 30.28	1.958	7 25 23.3	19.21
17	21 40 34.22	1.992	7 26 1.6	19.11	17 21 57.3	21 41 21.50	2.310	7 32 44.1	17.53
18	21 41 26.26	2.344	7 33 19.9	17.42	18 21 54.5	21 42 21.04	2.650	7 39 24.4	15.82
19	21 42 26.63	2.685	7 39 57.4	15.70	19 21 51.8	21 43 28.64	2.981	7 45 23.4	14.09
20	21 43 35.07	3.016	7 45 53.5	13.96	20 21 49.2	21 44 44.06	3.301	7 50 40.7	12.35
21	21 44 51.33	3.336	7 51 7.6	12.21	21 21 46.7	21 46 7.03	3.612	7 55 16.1	10.60
22	21 46 15.14	3.646	7 55 39.6	10.45	22 21 44.2	21 47 37.31	3.909	7 59 9.1	8.83
23	21 47 46.24	3.943	7 59 29.0	8.67	23 21 41.8	21 49 14.62	4.197	8 2 19.7	7.05
24	21 49 24.36	4.230	8 2 35.8	6.89	24 21 39.5	21 50 58.65	4.472	8 4 47.8	5.29
25	21 51 9.20	4.505	8 5 0.0	5.12	25 21 37.4	21 52 49.17	4.737	8 6 33.6	3.53
26	21 53 0.51	4.769	8 6 41.8	3.36	26 21 35.3	21 54 45.92	4.990	8 7 37.3	1.78
27	21 54 58.02	5.021	8 7 41.4	- 1.61	27 21 33.4	21 56 48.61	5.233	8 7 59.5	- 0.06
28	21 57 1.46	5.263	8 7 59.4	+ 0.12	28 21 31.5	21 58 57.00	5.464	8 7 40.3	+ 1.65
29	21 59 10.58	5.494	8 7 36.0	1.83	29 21 29.8	22 1 10.81	5.685	8 6 40.4	3.34
30	22 1 25.10	5.714	8 6 31.8	3.52	30 21 28.1	22 3 29.81	5.897	8 5 0.0	5.02
31	22 3 44.79	5.925	8 4 47.0	5.20	31 21 26.6	22 5 53.78	6.097	8 2 39.5	6.68
Apr. 1	22 6 9.42	6.125	8 2 22.0	6.86	1 21 25.1	22 8 22.46	6.289	7 59 39.4	8.32
2	22 8 38.74	6.316	7 59 17.7	8.50	2 21 23.7	22 10 55.67	6.473	7 56 0.2	9.94
3	22 11 12.57	6.499	7 55 34.1	10.12	3 21 22.4	22 13 33.14	6.649	7 51 42.6	11.53
4	22 13 50.64	6.673	7 51 12.1	11.71	4 21 21.2	22 16 14.70	6.815	7 46 47.2	13.10
5	22 16 32.78	6.838	7 46 12.3	13.28	5 21 20.0	22 19 0.15	6.974	7 41 14.4	14.65
6	22 19 18.79	6.996	7 40 35.0	14.83	6 21 18.9	22 21 49.34	7.125	7 35 4.6	16.17
7	22 22 8.51	7.146	7 34 20.8	16.35	7 21 17.8	22 24 42.05	7.269	7 28 18.6	17.67
8	22 25 1.73	7.289	7 27 30.5	17.85	8 21 16.8	22 27 38.14	7.405	7 20 57.0	19.14
9	22 27 58.31	7.425	7 20 4.6	19.32	9 21 15.9	22 30 37.44	7.536	7 13 0.3	20.59
10	22 30 58.08	7.555	7 12 3.6	20.77	10 21 15.0	22 33 39.82	7.661	7 4 29.1	22.01
11	22 34 0.91	7.679	7 3 28.1	22.19	11 21 14.2	22 36 45.09	7.780	6 55 23.9	23.42
12	22 37 6.62	7.797	6 54 18.6	23.60	12 21 13.4	22 39 53.15	7.894	6 45 45.1	24.81
13	22 40 15.10	7.910	6 44 35.6	24.98	13 21 12.6	22 43 3.87	8.001	6 35 33.5	26.16
14	22 43 26.23	8.017	6 34 20.0	26.33	14 21 11.9	22 46 17.14	8.105	6 24 49.8	27.48
15	22 46 39.89	8.120	6 23 32.3	27.65	15 21 11.2	22 49 32.82	8.204	6 13 34.7	28.79
16	22 49 55.94	8.218	6 12 13.2	28.95	16 21 10.6	22 52 50.83	8.297	6 1 48.5	30.06
17	22 53 14.29	8.311	6 0 23.1	30.22	17 21 10.0	22 56 11.03	8.387	5 49 32.1	31.32
18	22 56 34.82	8.400	5 48 2.9	31.47	18 21 9.4	22 59 33.35	8.472	5 36 46.1	32.53
19	22 59 57.45	8.485	5 35 13.2	32.68	19 21 8.9	23 2 57.65	8.554	5 23 31.2	33.72
20	23 3 22.06	8.566	5 21 54.6	33.87	20 21 8.4	23 6 23.87	8.631	5 9 48.1	34.87
21	23 6 48.58	9.643	5 8 7.9	35.02	21 21 7.9	23 9 51.90	8.705	4 55 37.5	36.01
22	23 10 16.90	8.717	4 43 53.8	36.15	22 21 7.4	23 13 21.69	8.776	4 41 0.1	37.10
23	23 13 46.96	8.787	4 39 13.0	37.24	23 21 7.0	23 16 53.13	8.843	4 25 56.9	38.18
24	23 17 18.65	8.854	4 24 6.4	38.31	24 21 6.6	23 20 26.15	8.908	4 10 28.3	39.21
25	23 20 51.91	8.918	4 8 34.6	39.34	25 21 6.2	23 24 0.66	8.969	3 54 35.3	40.22
26	23 24 26.66	8.979	3 52 38.5	40.34	26 21 5.8	23 27 36.62	9.028	3 38 18.6	41.18
27	23 28 2.85	9.037	3 36 18.8	41.30	27 21 5.5	23 31 13.96	9.083	3 21 38.9	42.12
28	23 31 40.40	9.092	3 19 36.2	42.24	28 21 5.2	23 34 52.63	9.137	3 4 37.0	43.03
29	23 35 19.26	9.145	3 2 31.5	43.14	29 21 5.0	23 38 32.54	9.188	2 47 13.9	43.90
30	23 38 59.36	9.196	2 45 5.6	44.01	30 21 4.7	23 42 13.67	9.238	2 29 30.2	44.74
31	23 42 40.67	+9.245	-2 27 19.2	+44.85	31 21 4.5	23 45 55.94	+9.285	-2 11 26.6	+45.56

VENUS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	23 42 40.67	+ 9.245	− 2 27 19.2	+44.85	1 21 4.5	23 45 55.94	+ 9.285	− 2 11 26.6	+45.56
2	23 46 23.11	9.292	2 9 13.0	45.66	2 21 4.3	23 49 39.32	9.330	1 53 3.8	46.34
3	23 50 6.66	9.337	1 50 47.8	46.44	3 21 4.1	23 53 23.77	9.374	1 34 22.7	47.10
4	23 53 51.27	9.380	1 32 4.3	47.19	4 21 3.9	23 57 9.28	9.417	1 15 23.9	47.81
5	23 57 36.93	9.423	1 13 3.3	47.90	5 21 3.7	0 0 55.78	9.458	0 56 8.3	48.50
6	0 1 23.58	9.464	0 53 45.5	48.58	6 21 3.5	0 4 43.27	9.499	0 36 36.6	49.15
7	0 5 11.21	9.505	0 34 11.8	49.23	7 21 3.4	0 8 31.71	9.539	− 0 16 49.3	49.79
8	0 8 59.79	9.544	− 0 14 22.6	49.86	8 21 3.3	0 12 21.09	9.577	+ 0 3 12.9	50.39
9	0 12 49.30	9.582	+ 0 5 41.4	50.46	9 21 3.2	0 16 11.39	9.612	0 23 29.0	50.95
10	0 16 39.73	9.619	0 25 59.3	51.02	10 21 3.1	0 20 2.60	9.651	0 43 58.5	51.50
11	0 20 31.07	9.656	0 46 30.5	51.56	11 21 3.0	0 23 54.72	9.689	1 4 40.7	52.01
12	0 24 23.31	9.694	1 7 14.3	52.07	12 21 2.9	0 27 47.72	9.727	1 25 34.7	52.50
13	0 28 16.43	9.732	1 28 9.8	52.55	13 21 2.9	0 31 41.61	9.764	1 46 40.1	52.95
14	0 32 10.44	9.769	1 49 16.6	53.00	14 21 2.9	0 35 36.39	9.800	2 7 56.4	53.39
15	0 36 5.33	9.805	2 10 34.1	53.43	15 21 2.9	0 39 32.04	9.837	2 29 22.4	53.79
16	0 40 1.09	9.842	2 32 1.3	53.83	16 21 2.9	0 43 28.56	9.874	2 50 57.8	54.16
17	0 43 57.72	9.878	2 53 37.7	54.19	17 21 2.9	0 47 25.97	9.911	3 12 41.4	54.49
18	0 47 55.23	9.915	3 15 22.3	54.52	18 21 2.9	0 51 24.26	9.947	3 34 32.8	54.79
19	0 51 53.62	9.951	3 37 14.5	54.82	19 21 3.0	0 55 23.42	9.984	3 56 31.3	55.08
20	0 55 52.88	9.988	3 59 13.8	55.10	20 21 3.0	0 59 23.46	10.020	4 18 36.2	55.33
21	0 59 53.02	10.024	4 21 19.3	55.35	21 21 3.1	1 3 24.40	10.057	4 40 46.5	55.54
22	1 3 54.05	10.061	4 43 30.2	55.56	22 21 3.2	1 7 26.21	10.094	5 3 1.7	55.73
23	1 7 55.95	10.098	5 5 45.8	55.74	23 21 3.3	1 11 28 89	10.131	5 25 20.8	55.87
24	1 11 58.72	10.135	5 28 5.3	55.88	24 21 3.4	1 15 32.47	10.169	5 47 43.2	56.00
25	1 16 2.39	10.172	5 50 27.9	56.00	25 21 3.6	1 19 36.95	10.206	6 10 8.1	56.08
26	1 20 6.95	10.209	6 12 53.0	56.08	26 21 3.7	1 23 42.33	10.244	6 32 34.9	56.15
27	1 24 12.42	10.247	6 35 19.8	56.14	27 21 3.9	1 27 48.62	10.282	6 55 2.7	56.17
28	1 28 18.79	10.285	6 57 47.5	56.16	28 21 4.1	1 31 55.83	10.320	7 17 30.8	56.16
29	1 32 26.08	10.323	7 20 15.4	56.15	29 21 4.3	1 36 3.95	10.358	7 39 58.4	56.13
30	1 36 34.28	10.361	7 42 42.7	56.11	30 21 4.5	1 40 12.99	10.396	8 2 24.9	56.10
31	1 40 43.40	10.399	8 5 8.8	56.04	31 21 4.7	1 44 22.96	10.435	8 24 49.2	55.98
June 1	1 44 53.45	10.438	8 27 32.7	55.95	1 21 4.9	1 48 33.88	10.475	8 47 10.8	55.84
2	1 49 4.45	10 478	8 49 53.7	55.81	2 21 5.2	1 52 45.77	10.515	9 9 29.0	55.69
3	1 53 16.41	10.518	9 12 11.2	55.65	3 21 5.4	1 56 58.63	10.556	9 31 43.1	55.50
4	1 57 29.34	10.559	9 34 24.5	55.46	4 21 5 7	2 1 12.45	10.597	9 53 52.4	55.28
5	2 1 43.23	10.600	9 56 32.9	55.23	5 21 6.0	2 5 27.28	10.639	10 15 56.1	55.03
6	2 5 58.13	10.642	10 18 35.6	54.98	6 21 6.3	2 9 43.12	10.682	10 37 53.5	54.75
7	2 10 14.04	10.685	10 40 31.9	54.70	7 21 6.6	2 13 59.99	10.725	10 59 44.1	54.46
8	2 14 30.98	10.728	11 2 21.2	54.40	8 21 7.0	2 18 17.91	10.769	11 21 26.9	54.12
9	2 18 48.96	10.772	11 24 2.7	54.06	9 21 7.4	2 22 36.89	10.814	11 43 1.3	53.76
10	2 23 8.00	10.816	11 45 35.7	53.69	10 21 7.8	2 26 56.96	10.859	12 4 26.7	53.36
11	2 27 28.13	10.861	12 6 59.6	53.29	11 21 8.2	2 31 18.12	10.905	12 25 42.3	52.94
12	2 31 49.35	10.907	12 28 13.6	52.87	12 21 8.6	2 35 40.39	10.952	12 46 47.5	52.49
13	2 36 11.68	10.954	12 49 17.1	52.41	13 21 9.0	2 40 3.78	10.999	13 7 41.6	52.01
14	2 40 35.13	11.001	13 10 9.4	51.93	14 21 9.5	2 44 28.33	11.047	13 28 23.6	51.49
15	2 44 59.73	11.049	13 30 49.5	51.41	15 21 10.0	2 48 54.03	11.096	13 48 53.1	50.96
16	2 49 25.48	11.098	13 51 17.1	50.87	16 21 10.5	2 53 20.91	11.145	14 9 9.1	50.38
17	2 53 52.40	11.147	14 11 31.1	50.29	17 21 11.0	2 57 48.98	11.195	14 29 11.1	49.78
18	2 58 20.51	11.196	14 31 30.9	49.68	18 21 11.6	3 2 18.25	11.245	14 48 58.2	49.14
19	3 2 49.81	11.246	14 51 15.8	49.04	19 21 12.2	3 6 48.72	11.295	15 8 29.9	48.48
20	3 7 20.31	11.296	15 10 45.1	48.38	20 21 12.8	3 11 20.41	11.345	15 27 45.1	47.79
21	3 11 52.02	11.346	15 29 57.9	47.68	21 21 13.4	3 15 53.30	11.396	15 46 43.3	47.06
22	3 16 24.94	11.397	15 48 53.6	46.95	22 21 14.1	3 20 27.42	11.447	16 5 23.8	46.31
23	3 20 59.08	11.448	16 7 31.5	46.19	23 21 14.7	3 25 2.77	11.499	16 23 45.7	45.52
24	3 25 34.45	11.499	16 25 50.7	45.40	24 21 15.4	3 29 39.34	11.550	16 41 48.5	44.71
25	3 30 11.03	11.550	16 43 50.7	44.59	25 21 16.1	3 34 17.13	11.600	16 59 31.3	43.86
26	3 34 48.83	11.600	17 1 30.7	43.74	26 21 16.8	3 38 56.14	11.651	17 16 53.4	42.99
27	3 39 27.84	11.651	17 18 49.9	42.86	27 21 17.5	3 43 36.36	11.701	17 33 54.0	42.08
28	3 44 8.06	11.701	17 35 47.6	41.95	28 21 18.2	3 48 17.80	11.752	17 50 32.6	41.14
29	3 48 49.49	11.751	17 52 23.2	41.01	29 21 18.9	3 53 0.44	11.802	18 6 48.4	40.18
30	3 53 32.11	11.801	18 8 35.9	40.05	30 21 19.7	3 57 44.28	11.852	18 22 40.8	39.19
31	3 58 15.93	+11.851	+18 24 25.2	+39.05	31 21 20.5	4 2 29.32	+11.901	+18 38 9.1	+38.17

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	3 58 15.93	+11.851	+18 24 25.2	+39.05	1 21 20.5	4 2 29.32	+11.901	+18 38 9.1	+38.17
2	4 3 0.94	11.900	18 39 50.3	38.03	2 21 21.3	4 7 15.53	11.950	18 53 12.6	37.12
3	4 7 47.12	11.949	18 54 50.5	36.98	3 21 22.2	4 12 2.90	11.999	19 7 50.7	36.05
4	4 12 34.45	11.997	19 9 25.2	35.91	4 21 23.1	4 10 51.45	12.047	19 22 2.7	34.96
5	4 17 22.95	12.045	19 23 33.8	34.81	5 21 24.0	4 21 41.15	12.095	19 35 48.0	33.83
6	4 22 12.59	12.092	19 37 15.6	33.68	6 21 24.9	4 26 31.99	12.141	19 49 6.0	32.68
7	4 27 3.36	12.138	19 50 30.1	32.53	7 21 26.8	4 31 23.92	12.187	20 1 56.0	31.50
8	4 31 55.22	12.184	20 3 16.6	31.35	8 21 26.7	4 36 16.95	12.232	20 14 17.6	30.30
9	4 36 48.18	12.229	20 15 34.6	30.15	9 21 27.6	4 41 11.06	12.278	20 26 10.0	29.07
10	4 41 42.21	12.274	20 27 23.4	28.92	10 21 28.6	4 46 6.24	12.322	20 37 32.7	27.82
11	4 46 37.31	12.318	20 38 42.5	27.67	11 21 29.6	4 51 2.48	12.366	20 48 25.0	26.55
12	4 51 33.45	12.361	20 49 31.2	26.40	12 21 30.6	4 55 59.75	12.408	20 58 46.6	25.26
13	4 56 30.61	12.403	20 59 49.1	25.11	13 21 31.6	5 0 58.01	12.448	21 8 36.9	23.94
14	5 1 28.76	12.443	21 9 35.7	23.79	14 21 32.7	5 5 57.25	12.488	21 17 55.5	22.59
15	5 6 27.88	12.483	21 18 50.6	22.44	15 21 33.7	5 10 57.41	12.527	21 26 41.6	21.23
16	5 11 27.91	12.521	21 27 33.0	21.08	16 21 34.8	5 15 58.49	12.564	21 34 54.5	19.84
17	5 16 28.86	12.558	21 35 42.2	19.69	17 21 35.9	5 21 0.47	12.600	21 42 33.7	18.43
18	5 21 30.70	12.594	21 43 17.7	18.28	18 21 37.0	5 26 3.30	12.635	21 49 39.3	17.01
19	5 26 33.38	12.628	21 50 19.5	16.86	19 21 38.1	5 31 6.92	12.667	21 56 10.7	15.58
20	5 31 36.84	12.660	21 56 47.2	15.43	20 21 39.2	5 36 11.30	12.698	22 2 7.3	14.12
21	5 36 41.06	12.691	22 2 40.1	13.97	21 21 40.3	5 41 16.42	12.729	22 7 28.8	12.65
22	5 41 46.01	12.721	22 7 57.9	12.50	22 21 41.4	5 46 22.22	12.756	22 12 14.7	11.16
23	5 46 51.63	12.748	22 12 40.2	11.01	23 21 42.6	5 51 28.66	12.781	22 16 24.9	9.67
24	5 51 57.88	12.773	22 16 46.8	9.52	24 21 43.8	5 56 35.68	12.806	22 19 58.9	8.15
25	5 57 4.71	12.797	22 20 17.1	8.00	25 21 45.0	6 1 43.26	12.827	22 22 56.4	6.63
26	6 2 12.08	12.818	22 23 11.0	6.48	26 21 46.2	6 6 51.32	12.845	22 25 17.2	5.09
27	6 7 19.93	12.836	22 25 28.2	4.94	27 21 47.4	6 11 59.80	12.862	22 27 1.1	3.55
28	6 12 28.21	12.853	22 27 8.6	3.40	28 21 48.6	6 17 8.70	12.878	22 28 7.6	1.98
29	6 17 36.87	12.868	22 28 11.6	1.84	29 21 49.8	6 22 17.93	12.891	22 28 36.5	+ 0.42
30	6 22 45.87	12.881	22 28 37.1	+ 0.28	30 21 51.1	6 27 27.45	12.902	22 28 27.9	- 1.14
31	6 27 55.15	12.892	22 28 25.2	- 1.28	31 21 52.3	6 32 37.20	12.910	22 27 41.8	2.72
Aug. 1	6 33 4.66	12.900	22 27 35.8	2.85	1 21 53.5	6 37 47.14	12.918	22 26 17.8	4.29
2	6 38 14.35	12.907	22 26 8.6	4.42	2 21 54.7	6 42 57.21	12.922	22 24 16.0	5.87
3	6 43 24.16	12.911	22 24 3.6	6.00	3 21 55.9	6 48 7.36	12.924	22 21 36.3	7.44
4	6 48 34.05	12.913	22 21 20.7	7.57	4 21 57.1	6 53 17.54	12.924	22 18 18.7	9.03
5	6 53 43.97	12.913	22 18 0.0	9.15	5 21 58.4	6 58 27.72	12.923	22 14 23.1	10.61
6	6 58 53.88	12.912	22 14 1.4	10.73	6 21 59.6	7 3 37.84	12.919	22 9 49.5	12.19
7	7 4 3.73	12.908	22 9 24.9	12.31	7 22 0.9	7 8 47.85	12.914	22 4 38.1	13.76
8	7 9 13.47	12.903	22 4 10.6	13.88	8 22 2 1	7 13 57.69	12·907	21 58 48.8	15.34
9	7 14 23.04	12.895	21 58 18.5	15.45	9 22 3.4	7 19 7.35	12.898	21 52 21.8	16.91
10	7 19 32.42	12.886	21 51 48.8	17.02	10 22 4.6	7 24 16.77	12.887	21 45 17.2	18.47
11	7 24 41.56	12.875	21 44 41.5	18.58	11 22 5.8	7 29 25.91	12.874	21 37 35.1	20.03
12	7 29 50.42	12.862	21 36 56.8	20.13	12 22 7.0	7 34 34.72	12.860	21 29 15.8	21.58
13	7 34 58.95	12.848	21 28 35.0	21.68	13 22 8.2	7 39 43.17	12.844	21 20 19.5	23.12
14	7 40 7.11	12.832	21 19 36.2	23.22	14 22 9.4	7 44 51.22	12.826	21 10 46.2	24.65
15	7 45 14.87	12.814	21 10 0.5	24.75	15 22 10.5	7 49 58.83	12.807	21 0 36.3	26.18
16	7 50 22.19	12.795	20 59 48.3	26.27	16 22 11.7	7 55 5.96	12.786	20 49 50.1	27.68
17	7 55 29.03	12.774	20 48 59.9	27.77	17 22 12.8	8 0 12.57	12.764	20 38 27.7	29.18
18	8 0 35.35	12.752	20 37 35.4	29.26	18 22 14.0	8 5 18.64	12.740	20 26 29.6	30.66
19	8 5 41.13	12.728	20 25 35.3	30.74	19 22 15.1	8 10 24.11	12.715	20 13 56.1	32.12
20	8 10 46.31	12.703	20 12 59.8	32.20	20 22 16.2	8 15 28.97	12.689	20 0 47.6	33.58
21	8 15 50.88	12.677	19 59 49.4	33.65	21 22 17.4	8 20 33.17	12.661	19 47 4.5	35.01
22	8 20 54.80	12.649	19 46 4.5	35.08	22 22 18.5	8 25 36.71	12.633	19 32 47.2	36.43
23	8 25 58.05	12.621	19 31 45.5	36.50	23 22 19.6	8 30 39.53	12.603	19 17 56.1	37.84
24	8 31 0.59	12.591	19 16 52.7	37.90	24 22 20.7	8 35 41.62	12.572	19 2 31.6	39.21
25	8 36 2.40	12.560	19 1 26.7	39.27	25 22 21.7	8 40 42.95	12.539	18 46 34.4	40.56
26	8 41 3.45	12.528	18 45 28.0	40.62	26 22 22.8	8 45 43.49	12.506	18 30 4.9	41.90
27	8 46 3.72	12.495	18 28 57.1	41.95	27 22 23.8	8 50 43.24	12.472	18 13 3.5	43.21
28	8 51 3.20	12.461	18 11 54.4	43.26	28 22 24.9	8 55 42.19	12.438	17 55 30.9	44.50
29	8 56 1.88	12.427	17 54 20.5	44.55	29 22 25.9	9 0 40.29	12.403	17 37 27.6	45.77
30	9 0 59.72	12.392	17 36 16.0	45.82	30 22 26.9	9 5 37.55	12.368	17 18 54.2	47.01
31	9 5 56.72	+12.357	+17 17 41.4	-47.06	31 22 27.9	9 10 33.96	+12.332	+16 59 51.1	-48.24

VENUS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	9 10 52.87	+12.322	+16 58 37.2	−48.28	1 22 28.9	9 15 29.50	+12.296	+16 40 19.2	−49.43
2	9 15 48.16	12.286	16 39 4.2	49.47	2 22 29.8	9 20 24.18	12.260	16 20 18.7	50.60
3	9 20 42.59	12.250	16 19 2.7	50.64	3 22 30.8	9 25 18.00	12.224	15 59 50.3	51.75
4	9 25 36.16	12.214	15 58 33.4	51.79	4 22 31.7	9 30 10.93	12.188	15 38 54.7	52.88
5	9 30 28.85	12.178	15 37 36.9	52.91	5 22 32.6	9 35 3.01	12.152	15 17 32.6	53.97
6	9 35 20.69	12.142	15 16 14.0	54.00	6 22 33.5	9 39 54.23	12.116	14 55 44.3	55.04
7	9 40 11.67	12.106	14 54 25.0	55.07	7 22 34.4	9 44 44.58	12.081	14 33 30.6	56.09
8	9 45 1.79	12.071	14 32 10.6	56.12	8 22 35.3	9 49 34.09	12.045	14 10 52.2	57.11
9	9 49 51.07	12.036	14 9 31.6	57.13	9 22 36.2	9 54 22.77	12.011	13 47 49.7	58.10
10	9 54 39.53	12.002	13 46 28.5	58.12	10 22 37.0	9 59 10.62	11.977	13 24 23.7	59.06
11	9 59 27.16	11.968	13 23 2.0	59.08	11 22 37.9	10 3 57.65	11.943	13 0 34.7	60.00
12	10 4 13.98	11.934	12 59 12.6	60.02	12 22 38.7	10 8 43.90	11.910	12 36 23.6	60.93
13	10 9 0.02	11.902	12 35 1.1	60.94	13 22 39.5	10 13 29.38	11.878	12 11 50.9	61.81
14	10 13 45.30	11.870	12 10 28.1	61.82	14 22 40.3	10 18 14.10	11.847	11 46 57.3	62.66
15	10 18 29.82	11.839	11 45 34.2	62.67	15 22 41.1	10 22 58.08	11.817	11 21 43.6	63.48
16	10 23 13.60	11.809	11 20 20.2	63.49	16 22 41.9	10 27 41.34	11.788	10 56 10.3	64.28
17	10 27 56.67	11.780	10 54 46.7	64.29	17 22 42.7	10 32 23.91	11.759	10 30 18.2	65.06
18	10 32 39.05	11.752	10 28 54.4	65.06	18 22 43.4	10 37 5.80	11.732	10 4 7.9	65.80
19	10 37 20.76	11.725	10 2 44.0	65.80	19 22 44.2	10 41 47.04	11.705	9 37 40.3	66.51
20	10 42 1.82	11.698	9 36 16.3	66.51	20 22 44.9	10 46 27.64	11.680	9 10 55.9	67.19
21	10 46 42.25	11.673	9 9 31.9	67.19	21 22 45.7	10 51 7.64	11.655	8 43 55.5	67.84
22	10 51 22.08	11.648	8 42 31.5	67 84	22 22 46.4	10 55 47.07	11.632	8 16 39.9	68.46
23	10 56 1.34	11.625	8 15 15.9	68.46	23 22 47.1	11 0 25.95	11.609	7 49 9.6	69.05
24	11 0 40.06	11.602	7 47 45.7	69.05	24 22 47.8	11 5 4.31	11.588	7 21 25.6	69.62
25	11 5 18.26	11.581	7 20 1.8	69.61	25 22 48.5	11 9 42.19	11.568	6 53 28.4	70.15
26	11 9 55.98	11.562	6 52 4.8	70.14	26 22 49.2	11 14 19.59	11.549	6 25 18.9	70.64
27	11 14 33.23	11.543	6 23 55.5	70.63	27 22 49.9	11 18 56.56	11.532	5 56 57.8	71.11
28	11 19 10.05	11.526	5 55 34.6	71.10	28 22 50.5	11 23 33.12	11.516	5 28 25.7	71.55
29	11 23 46.47	11.510	5 27 2.8	71.54	29 22 51.2	11 28 9.31	11.501	4 59 43.4	71.97
30	11 28 22.52	11.495	4 58 20.8	71.95	30 22 51.8	11 32 45.17	11.488	4 30 51.6	72.34
Oct. 1	11 32 58.24	11.482	4 29 29.4	72.32	1 22 52.5	11 37 20.74	11.477	4 1 51.1	72.69
2	11 37 33.67	11.471	4 0 29.3	72.67	2 22 53.1	11 41 56.05	11.467	3 32 42.7	73.01
3	11 42 8.84	11.461	3 31 21.3	72.99	3 22 53.8	11 46 31.12	11.458	3 3 27.1	73.30
4	11 46 43.77	11.452	3 2 6.1	73.28	4 22 54.4	11 51 6.00	11.450	2 34 4.8	73.55
5	11 51 18.52	11.445	2 32 44.3	73.53	5 22 55.0	11 55 40.74	11.445	2 4 36.7	73.78
6	11 55 53.13	11.440	2 3 16.7	73.76	6 22 55.6	12 0 15.35	11.441	1 35 3.4	73.97
7	12 0 27.62	11.436	1 33 44.0	73.95	7 22 56.3	12 4 49.88	11.439	1 5 25.7	74.15
8	12 5 2.03	11.434	1 4 6.9	74.12	8 22 56.9	12 9 24.38	11.438	0 35 44.4	74.29
9	12 9 36.41	11.433	0 34 26.2	74.26	9 22 57.5	12 13 58.90	11.439	+ 0 6 0.1	74.40
10	12 14 10.81	11.434	+ 0 4 42.6	74.37	10 22 58.1	12 18 33.46	11.442	− 0 23 46.5	74.47
11	12 18 45.25	11·437	− 0 25 3.3	74.44	11 22 58.8	12 23 8.12	11.447	0 53 34.6	74.52
12	12 23 19.79	11.442	0 54 50.7	74.49	12 22 59.4	12 27 42.91	11.453	1 23 23.5	74.53
13	12 27 54.47	11.448	1 24 38.8	74.50	13 23 0.1	12 32 17.88	11.461	1 53 12.4	74.52
14	12 32 29.33	11.456	1 54 26.9	74.49	14 23 0.7	12 36 53.06	11.471	2 23 0.7	74.48
15	12 37 4.40	11.466	2 24 14.3	74.44	15 23 1.4	12 41 28.50	11.483	2 52 47.5	74.41
16	12 41 39.73	11.478	2 54 0.2	74.37	16 23 2.0	12 46 4.26	11.497	3 22 32.1	74.31
17	12 46 15.37	11.492	3 23 43.9	74.27	17 23 2.7	12 50 40.35	11.512	3 52 13.8	74.17
18	12 50 51.35	11.507	3 53 24.7	74 13	18 23 3.3	12 55 16.82	11.529	4 21 51.8	74.00
19	12 55 27.71	11.524	4 23 1.7	73.96	19 23 4.0	12 59 53.70	11.547	4 51 25.3	73.80
20	13 0 4.48	11.542	4 52 34.2	73.75	20 23 4.6	13 4 31.06	11.567	5 20 53.6	73.56
21	13 4 41.72	11.562	5 22 1.4	73.51	21 23 5.3	13 9 8.90	11.588	5 50 15.9	73.29
22	13 9 19.45	11.583	5 51 22.6	73.24	22 23 6.0	13 13 47.27	11.611	6 19 31.3	72.99
23	13 13 57.71	11.606	6 20 36.9	72.94	23 23 6.7	13 18 26.21	11.635	6 48 39.1	72.66
24	13 18 36.54	11.630	6 49 43.6	72.61	24 23 7.4	13 23 5.77	11.661	7 17 38.5	72.29
25	13 23 15.98	11.656	7 18 41.8	72.24	25 23 8.1	13 27 45.97	11.689	7 46 28.7	71.89
26	13 27 56.06	11.684	7 47 30.8	71.84	26 23 8.8	13 32 26.84	11.718	8 15 8.9	71.46
27	13 32 36.81	11.713	8 16 9.8	71.41	27 23 9.5	13 37 8.43	11.748	8 43 38.4	70.99
28	13 37 18.28	11.743	8 44 38.0	70.94	28 23 10.3	13 41 50.77	11.780	9 11 56.3	70.50
29	13 42 0.49	11.775	9 12 54.6	70.44	29 23 11.1	13 46 33.88	11.813	9 40 1.9	69.97
30	13 46 43.48	11.808	9 40 58.8	69.91	30 23 11.9	13 51 17.81	11.848	10 7 54.4	69.40
31	13 51 27.28	11.843	10 8 49.9	69.34	31 23 12.7	13 56 2.59	11.884	10 35 32.9	68.80
32	13 56 11.93	+11.879	−10 36 27.0	−68.74	32 23 13.6	14 0 48.24	+11.921	−11 2 56.6	−68.17

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	13 56 11.93	+11.879	−10 36 27.0	−68.74	1 23 13.6	14 0 48.24	+11.921	−11 2 56.6	−68.17
2	14 0 57.45	11.916	11 3 49.3	68.11	2 23 14.4	14 5 34.80	11.960	11 30 4.8	67.51
3	14 5 43.88	11.954	11 30 56.1	67.45	3 23 15.3	14 10 22.30	12.000	11 56 56.7	66.81
4	14 10 31.24	11.994	11 57 46.5	66.75	4 23 16.1	14 15 10.77	12.040	12 23 31.4	66.08
5	14 15 19.57	12.034	12 24 19.7	66.02	5 23 17.0	14 20 0.25	12.082	12 49 48.2	65.32
6	14 20 8.90	12.076	12 50 35.0	65.26	6 23 17.9	14 24 50.77	12.126	13 15 46.2	64.53
7	14 24 59.27	12.120	13 16 31.5	64.46	7 23 18.8	14 29 42.33	12.172	13 41 24.9	63.70
8	14 29 50.68	12.165	13 42 8.6	63.63	8 23 19.7	14 34 34.97	12.217	14 6 43.3	62.84
9	14 34 43.16	12.210	14 7 25.4	62.77	9 23 20.7	14 39 28.73	12.263	14 31 40.6	61.94
10	14 39 36.75	12.256	14 32 21.1	61.87	10 23 21.7	14 44 23.61	12.310	14 56 15.9	61.01
11	14 44 31.46	12.303	14 56 54.8	60.94	11 23 22.7	14 49 19.64	12.359	15 20 28.5	60.05
12	14 49 27.32	12.351	15 21 5.8	59.98	12 23 23.7	14 54 16.85	12.409	15 44 17.5	59.05
13	14 54 24.35	12.401	15 44 53.2	58.98	13 23 24.7	14 59 15.24	12.459	16 7 42.3	58.02
14	14 59 22.56	12.451	16 8 16.4	57.95	14 23 25.7	15 4 14.84	12.509	16 30 42.1	56.96
15	15 4 21.97	12.501	16 31 14.6	56.89	15 23 26.8	15 9 15.66	12.559	16 53 16.0	55.86
16	15 9 22.60	12.551	16 53 46.8	55.79	16 23 27.9	15 14 17.70	12.610	17 15 23.1	54.73
17	15 14 24.44	12.602	17 15 52.3	54.66	17 23 29.0	15 19 20.97	12.662	17 37 2.5	53.56
18	15 19 27.51	12.653	17 37 30.1	53.49	18 23 30.1	15 24 25.48	12.714	17 58 13.5	52.36
19	15 24 31.81	12.705	17 58 39.5	52.29	19 23 31.3	15 29 31.24	12.765	18 18 55.4	51.13
20	15 29 37.35	12.756	18 19 19.8	51.06	20 23 32.5	15 34 38.24	12.818	18 39 7.4	49.86
21	15 34 44.12	12.808	18 39 30.2	49.80	21 23 33.7	15 39 46.45	12.869	18 58 48.7	48.57
22	15 39 52.10	12.859	18 59 10.0	48.51	22 23 34.9	15 44 55.90	12.919	19 17 58.8	47.25
23	15 45 1.31	12.909	19 18 18.6	47.19	23 23 36.1	15 50 6.56	12.969	19 36 36.7	45.89
24	15 50 11.73	12.959	19 36 55.0	45.83	24 23 37.3	15 55 18.43	13.020	19 54 41.6	44.50
25	15 55 23.35	13.009	19 54 58.4	44.44	25 23 38.6	16 0 31.50	13.069	20 12 12.7	43.08
26	16 0 36.16	13.058	20 12 28.1	43.02	26 23 39.9	16 5 45.75	13.117	20 29 9.5	42.64
27	16 5 50.12	13.106	20 29 23.5	41.58	27 23 41.2	16 11 1.14	13.165	20 45 31.1	40.15
28	16 11 5.23	13.153	20 45 43.7	40.10	28 23 42.5	16 16 17.64	13.211	21 1 16.9	38.65
29	16 16 21.45	13.199	21 1 28.2	38.60	29 23 43.9	16 21 35.23	13.256	21 16 26.3	37.12
30	16 21 38.78	13.244	21 16 36.3	37.07	30 23 45.2	16 26 53.92	13.300	21 30 58.7	35.57
Dec. 1	16 26 57.18	13.288	21 31 7.5	35.52	1 23 46.6	16 32 13.64	13.344	21 44 53.3	33.98
2	16 32 16.61	13.331	21 45 0.9	33.93	2 23 48.0	16 37 34.38	13.385	21 58 9.5	32.37
3	16 37 37.05	13.372	21 58 16.0	32.32	3 23 49.4	16 42 56.10	13.425	22 10 46.9	30.73
4	16 42 58.46	13.412	22 10 52.3	30.69	4 23 50.8	16 48 18.76	13.463	22 22 44.8	29.08
5	16 48 20.80	13.450	22 22 49.2	29.04	5 23 52.3	16 53 42.32	13.500	22 34 2.6	27.41
6	16 53 44.04	13.486	22 34 6.1	27.37	6 23 53.7	16 59 6.75	13.535	22 44 39.9	25.70
7	16 59 8.14	13.521	22 44 42.6	25.67	7 23 55.2	17 4 31.98	13.568	22 54 36.2	23.98
8	17 4 33.04	13.554	22 54 38.1	23.95	8 23 56.7	17 9 57.97	13.599	23 3 51.1	22.25
9	17 9 58.70	13.585	23 3 52.3	22.22	9 23 58.2	17 15 24.70	13.628	23 12 24.0	20.49
10	17 15 25.09	13.614	23 12 24.6	20.47	10 23 59.7	17 20 52.07	13.654	23 20 14.6	18.72
11	17 20 52.14	13.640	23 20 14.7	18.70					
12	17 26 19.81	13.665	23 27 22.0	16.92	12 0 1.3	17 26 20.10	13.680	23 27 22.3	16.93
13	17 31 48.06	13.688	23 33 46.4	15.12	13 0 2.8	17 31 48.70	13.703	23 33 47.0	15.13
14	17 37 16.82	13.708	23 39 27.4	13.30	14 0 4.4	17 37 17.81	13.723	23 39 28.3	13.31
15	17 42 46.02	13.725	23 44 24.8	11.48	15 0 5.9	17 42 47.36	13.740	23 44 25.9	11.48
16	17 48 15.61	13.740	23 48 38.2	9.64	16 0 7.5	17 48 17.31	13.755	23 48 39.4	9.64
17	17 53 45.53	13.753	23 52 7.6	7.80	17 0 9.0	17 53 47.59	13.768	23 52 8.7	7.80
18	17 59 15.72	13.763	23 54 52.6	5.95	18 0 10.6	17 59 18.14	13.778	23 54 53.6	5.95
19	18 4 46.12	13.770	23 56 53.2	4.10	19 0 12.1	18 4 48.90	13.785	23 56 53.9	4.09
20	18 10 16.66	13.774	23 58 9.3	2.24	20 0 13.7	18 10 19.80	13.789	23 58 9.7	2.22
21	18 15 47.26	13.775	23 58 40.7	− 0.38	21 0 15.2	18 15 50.76	13.790	23 58 40.7	− 0.36
22	18 21 17.86	13.774	23 58 27.4	+ 1.48	22 0 16.8	18 21 21.72	13.789	23 58 27.0	+ 1.50
23	18 26 48.41	13.770	23 57 29.3	3.35	23 0 18.3	18 26 52.63	13.785	23 57 28.4	3.38
24	18 32 18.82	13.763	23 55 46.5	5.21	24 0 19.9	18 32 23.40	13.778	23 55 44.9	5.25
25	18 37 49.04	13.754	23 53 19.1	7.07	25 0 21.5	18 37 53.98	13.769	23 53 16.6	7.11
26	18 43 18.98	13.741	23 50 7.1	8.92	26 0 23.1	18 43 24.27	13.756	23 50 3.7	8.96
27	18 48 48.59	13.726	23 46 10.7	10.77	27 0 24.6	18 48 54.23	13.740	23 46 6.3	10.82
28	18 54 17.80	13.708	23 41 30.1	12.61	28 0 26.2	18 54 23.78	13.722	23 41 24.6	12.66
29	18 59 46.57	13.688	23 36 5.5	14.44	29 0 27.8	18 59 52.89	13.702	23 35 58.9	14.49
30	19 5 14.81	13.665	23 29 57.1	16.26	30 0 29.3	19 5 21.47	13.679	23 29 49.2	16.32
31	19 10 42.47	13.639	23 23 5.2	18.06	31 0 30.8	19 10 49.46	13.653	23 22 56.0	18.12
32	19 16 9.48	+13.611	−23 15 30.0	+19.86	32 0 32.3	19 16 16.80	+13.625	−23 15 19.4	+19.93

MARS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	0 45 26.29	+5.302	+ 5 8 3.3	+37.20	1 6 0.1	0 45 58.12	+5.302	+ 5 11 46.6	+37.16
2	0 47 33.84	5.324	5 22 56.2	37.19	2 5 58.3	0 48 5.65	5.324	5 26 38.3	37.14
3	0 49 41.91	5.346	5 37 48.6	37.17	3 5 56.5	0 50 13.69	5.345	5 41 29.5	37.12
4	0 51 50.49	5.368	5 52 40.4	37.14	4 5 54.7	0 52 22.24	5.367	5 56 20.0	37.09
5	0 53 59.58	5·389	6 7 31.7	37.12	5 5 52.9	0 54 31.30	5.388	6 11 10.0	37.06
6	0 56 9.18	5.411	6 22 22.2	37.08	6 5 51.2	0 56 40.86	5.409	6 25 59.2	37.02
7	0 58 19.28	5.432	6 37 11.8	37.04	7 5 49.4	0 58 50.92	5.430	6 40 47.4	36.98
8	1 0 29.88	5.452	6 52 0.3	36.99	8 5 47.6	1 1 1.48	5.450	6 55 34.5	36.93
9	1 2 40.97	5.472	7 6 47.4	36.93	9 5 45.9	1 3 12.52	5.470	7 10 20.2	36.87
10	1 4 52.54	5.492	7 21 33.2	36.87	10 5 44.1	1 5 24.04	5.490	7 25 4.5	36.81
11	1 7 4.58	5.511	7 36 17.4	36.81	11 5 42.4	1 7 36.04	5.510	7 39 47.2	36.75
12	1 9 17.09	5.531	7 51 0.0	36.74	12 5 40.7	1 9 48.50	5.529	7 54 28.3	36.68
13	1 11 30.05	5.550	8 5 40.7	36.66	13 5 38.9	1 12 1.41	5.548	8 9 7.5	36.60
14	1 13 43.47	5.568	8 20 19.5	36.57	14 5 37.2	1 14 14.78	5.566	8 23 44.8	36.51
15	1 15 57.34	5.587	8 34 56.0	36.47	15 5 35.5	1 16 28.59	5.584	8 38 19.8	36.41
16	1 18 11.65	5.605	8 49 30.2	36.37	16 5 33.8	1 18 42.84	5.602	8 52 52.4	36.31
17	1 20 26.39	5.623	9 4 2.0	36.27	17 5 32.1	1 20 57.52	5.620	9 7 22.6	36.20
18	1 22 41.56	5.641	9 18 31.2	36.16	18 5 30.4	1 23 12.63	5.638	9 21 50.2	36.09
19	1 24 57.16	5.659	9 32 57.7	36.05	19 5 28.7	1 25 28.17	5.656	9 36 15.1	35.98
20	1 27 13.18	5.677	9 47 21.5	35.93	20 5 27.1	1 27 44.13	5.674	9 50 37.2	35.86
21	1 29 29.63	5.694	10 1 42.3	35.80	21 5 25.4	1 30 0.52	5.691	10 4 56.4	35.73
22	1 31 46.50	5.712	10 16 0.2	35.67	22 5 23.8	1 32 17.33	5.709	10 19 12.6	35.61
23	1 34 3.80	5.730	10 30 14.9	35.55	23 5 22.1	1 34 34.57	5.727	10 33 25.6	35.48
24	1 36 21.52	5.747	10 44 26.4	35.42	24 5 20.5	1 36 52.23	5.744	10 47 35.4	35.34
25	1 38 39.67	5.765	10 58 34.6	35.27	25 5 18.8	1 39 10.31	5.762	11 1 41.9	35.20
26	1 40 58.24	5.783	11 12 39.4	35.13	26 5 17.2	1 41 28.82	5.781	11 15 45.0	35.05
27	1 43 17.25	5.801	11 26 40.6	34.97	27 5 15.6	1 43 47.77	5.799	11 29 44.4	34.90
28	1 45 36.69	5.818	11 40 38.1	34.82	28 5 14.0	1 46 7.15	5.816	11 43 40.2	34.75
29	1 47 56.56	5.837	11 54 32.0	34.66	29 5 12.3	1 48 26.96	5.834	11 57 32.3	34.59
30	1 50 16.87	5.855	12 8 22.0	34.50	30 5 10.7	1 50 47.20	5.851	12 11 20.5	34.42
31	1 52 37.60	5.872	12 22 8.0	34.33	31 5 9.2	1 53 7.87	5.870	12 25 4.7	34.26
Feb. 1	1 54 58.75	5.890	12 35 49.9	34.16	1 5 7.6	1 55 28.96	5.888	12 38 44.8	34.08
2	1 57 20.34	5.909	12 49 27.5	33.98	2 5 6.0	1 57 50.48	5.905	12 52 20.6	33.90
3	1 59 42.35	5.927	13 3 0.8	33.79	3 5 4.4	2 0 12.42	5.923	13 5 52.1	33.71
4	2 2 4.79	5.944	13 16 29.6	33.60	4 5 2.8	2 2 34.79	5.940	13 19 19.0	33.52
5	2 4 27.66	5.961	13 29 53.8	33.40	5 5 1.3	2 4 57.59	5.958	13 32 41.3	33.32
6	2 6 50.94	5.979	13 43 13.1	33.20	6 4 59.7	2 7 20.81	5.976	13 45 58.8	33.12
7	2 9 14.64	5.995	13 56 27.5	33.00	7 4 58.2	2 9 44.44	5.993	13 59 11.3	32.92
8	2 11 38.74	6.013	14 9 36.9	32.79	8 4 56.7	2 12 8.47	6.010	14 12 18.8	32.71
9	2 14 3.23	6.029	14 22 41.2	32.57	9 4 55.1	2 14 32.90	6.026	14 25 21.2	32.49
10	2 16 28.13	6.046	14 35 40.2	32.34	10 4 53.6	2 16 57.72	6.043	14 38 18.3	32.26
11	2 18 53.41	6.061	14 48 33.7	32.11	11 4 52.1	2 19 22.93	6.059	14 51 9.9	32.03
12	2 21 19.10	6.078	15 1 21.7	31.87	12 4 50.6	2 21 48.54	6.075	15 3 56.0	31.81
13	2 23 45.18	6.094	15 14 4.0	31.64	13 4 49.1	2 24 14.55	6.091	15 16 36.4	31.56
14	2 26 11.65	6.111	15 26 40.4	31.39	14 4 47.6	2 26 40.94	6.107	15 29 10.8	31.30
15	2 28 38.50	6.127	15 39 10·9	31.14	15 4 46.1	2 29 7.72	6.123	15 41 39.3	31.06
16	2 31 5.73	6.142	15 51 35 3	30.88	16 4 44.6	2 31 34.88	6.140	15 54 1.7	30.80
17	2 33 33.35	6.158	16 3 53.5	30.62	17 4 43.1	2 34 2.42	6.156	16 6 17.9	30.55
18	2 36 1.34	6.175	16 16 5 5	30.37	18 4 41.6	2 36 30.33	6.171	16 18 27.9	30.29
19	2 38 29.72	6.190	16 28 11.2	30.11	19 4 40.2	2 38 58.63	6.187	16 30 31.6	30.02
20	2 40 58.48	6.206	16 40 10.5	29.83	20 4 38.7	2 41 27.32	6.203	16 42 28.9	29.75
21	2 43 27.62	6.222	16 52 3.4	29.56	21 4 37.3	2 43 56.38	6.219	16 54 19.7	29.47
22	2 45 57.14	6.238	17 3 49.5	29.28	22 4 35.8	2 46 25.82	6.234	17 6 3.9	29.20
23	2 48 27.03	6.254	17 15 29.0	29.00	23 4 34.4	2 48 55.64	6.250	17 17 41.4	28.92
24	2 50 57.32	6.270	17 27 1.7	28.71	24 4 32.9	2 51 25.85	6.267	17 29 12.1	28.63
25	2 53 27.99	6.286	17 38 27.3	28.42	25 4 31.5	2 53 56.45	6.283	17 40 35.7	28.34
26	2 55 59.05	6.302	17 49 45.9	28.12	26 4 30.1	2 56 27.43	6.299	17 51 52.3	28.05
27	2 58 30.49	6.318	18 0 57.4	27.82	27 4 28.7	2 58 58.79	6.314	18 3 1.8	27.75
28	3 1 2.31	6.334	18 12 1.6	27.52	28 4 27.3	3 1 30.53	6.330	18 14 4.0	27.44
29	3 3 34.52	6.350	18 22 58.5	27.21	29 4 25.9	3 4 2 66	6.346	18 24 58.9	27.13
30	3 6 7.11	6.366	18 33 48.0	26.90	30 4 24.5	3 6 35.17	6.362	18 35 46.4	26.83
31	3 8 40.08	+6.382	+18 44 30.0	+26.59	31 4 23.1	3 9 8.06	+6.378	+18 46 26.4	+26.51

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	3 3 34.52	+6.350	+18 22 58.5	+27.21	1 4 25.9	3 4 2.66	+6.346	+18 24 58.9	+27.13
2	3 6 7.11	6.366	18 33 48.0	26.90	2 4 24.5	3 6 35.17	6.362	18 35 46.4	26.83
3	3 8 40.08	6.382	18 44 30.0	26.59	3 4 23.1	3 9 8.06	6.378	18 46 26.4	26.51
4	3 11 13.43	6.397	18 55 4.4	26.27	4 4 21.7	3 11 41.33	6.394	18 56 58.7	26.18
5	3 13 47.15	6.413	19 5 31.0	25.94	5 4 20.3	3 14 14.97	6.410	19 7 23.3	25.86
6	3 16 21.24	6.428	19 15 49.7	25.61	6 4 18.9	3 16 48.98	6.425	19 17 40.0	25.53
7	3 18 55.69	6.443	19 26 0.4	25.28	7 4 17.6	3 19 23.35	6.439	19 27 48.7	25.19
8	3 21 30.50	6.458	19 36 3.0	24.94	8 4 16.2	3 21 58.08	6.454	19 37 49.3	24.84
9	3 24 5.66	6.472	19 45 57.4	24.59	9 4 14.8	3 24 33.16	6.469	19 47 41.6	24.50
10	3 26 41.17	6.486	19 55 43.4	24.25	10 4 13.5	3 27 8.58	6.483	19 57 25.6	24.16
11	3 29 17.01	6.500	20 5 21.1	23.89	11 4 12.1	3 29 44.33	6.496	20 7 1.3	23.81
12	3 31 53.19	6.614	20 14 50.2	23.53	12 4 10.8	3 32 20.42	6.510	20 16 28.4	23.45
13	3 34 29.70	6.528	20 24 10.7	23.17	13 4 9.5	3 34 56.84	6.524	20 25 46.9	23.09
14	3 37 6.53	6.542	20 33 22.5	22.81	14 4 8.2	3 37 33.58	6.538	20 34 56.7	22.73
15	3 39 43.68	6.555	20 42 25.6	22.44	15 4 6.8	3 40 10.64	6.551	20 43 57.8	22.36
16	3 42 21.15	6.568	20 51 19.8	22.07	16 4 5.5	3 42 48.02	6.564	20 52 50.0	21.98
17	3 44 58.92	6.581	21 0 5.0	21.70	17 4 4.2	3 45 25.71	6.577	21 1 33.2	21.61
18	3 47 37.01	6.593	21 8 41.2	21.32	18 4 2.9	3 48 3.70	6.589	21 10 7.4	21.23
19	3 50 15.40	6.606	21 17 8.3	20.93	19 4 1.6	3 50 42.00	6.602	21 18 32.5	20.85
20	3 52 54.09	6.618	21 25 26.1	20.55	20 4 0.3	3 53 20.60	6.614	21 26 48.3	20.47
21	3 55 33.07	6.630	21 33 34.7	20.16	21 3 59.0	3 55 59.49	6.626	21 34 54.9	20.08
22	3 58 12.35	6.642	21 41 34.0	19.77	22 3 57.7	3 58 38.67	6.639	21 42 52.2	19.69
23	4 0 51.92	6.655	21 49 23.9	19.37	23 3 56.5	4 1 18.15	6.651	21 50 40.1	19.30
24	4 3 31.78	6.667	21 57 4.2	18.98	24 3 55.2	4 3 57.91	6.663	21 58 18.5	18.90
25	4 6 11.92	6.679	22 4 35.0	18.58	25 3 53.9	4 6 37.96	6.675	22 5 47.3	18.50
26	4 8 52.36	6.690	22 11 56.2	18.18	26 3 52.6	4 9 18.30	6.687	22 13 6.6	18.10
27	4 11 33.07	6.701	22 19 7.8	17.78	27 3 51.4	4 11 58.92	6.698	22 20 16.2	17.70
28	4 14 14.07	6.713	22 26 9.6	17.37	28 3 50.1	4 14 39.82	6.710	22 27 16.1	17.29
29	4 16 55.34	6.725	22 33 1.5	16.95	29 3 48.9	4 17 21.00	6.721	22 34 6.0	16.87
30	4 19 36.88	6.736	22 39 43.4	16.54	30 3 47.6	4 20 2.44	6.732	22 40 46.1	16.46
31	4 22 18.69	6.747	22 46 15.4	16.12	31 3 46.4	4 22 44.15	6.743	22 47 16.2	16.04
Apr. 1	4 25 0.75	6.758	22 52 37.5	15.70	1 3 45.1	4 25 26.11	6.753	22 53 36.3	15.62
2	4 27 43.07	6.768	22 58 49.3	15.28	3 3 43.9	4 28 8.32	6.764	22 59 46.3	15.20
3	4 30 25.62	6.778	23 4 51.0	14.86	3 3 42.7	4 30 50.78	6.774	23 5 46.1	14.78
4	4 33 8.41	6.788	23 10 42.5	14.43	4 3 41.4	4 33 33.47	6.784	23 11 35.7	14.35
5	4 35 51.43	6.797	23 16 23.6	14.00	5 3 40.2	4 36 16.38	6.793	23 17 14.9	13.92
6	4 38 34.67	6.806	23 21 54.4	13.56	6 3 39.0	4 38 59.51	6.802	23 22 43.8	13.48
7	4 41 18.11	6.814	23 27 14.7	13.12	7 3 37.8	4 41 42.85	6.810	23 28 2.3	13.05
8	4 44 1.76	6.822	23 32 24.5	12.69	8 3 36.6	4 44 26.38	6.817	23 33 10.3	12.61
9	4 46 45.59	6.830	23 37 23.8	12.25	9 3 35.4	4 47 10.10	6.825	23 38 7.7	12.17
10	4 49 29.61	6.837	23 42 12.5	11.81	10 3 34.1	4 49 54.01	6.833	23 42 54.6	11.73
11	4 52 13.80	6.845	23 46 50.6	11.36	11 3 32.9	4 52 38.09	6.840	23 47 30.8	11.29
12	4 54 58.17	6.851	23 51 18.0	10.92	12 3 31.7	4 55 22.34	6.847	23 51 56.4	10.84
13	4 57 42.68	6.858	23 55 34.7	10.47	13 3 30.5	4 58 6.74	6.853	23 56 11.3	10.40
14	5 0 27.35	6.864	23 59 40.6	10.02	14 3 29.3	5 0 51.29	6.859	24 0 15.4	9.94
15	5 3 12.15	6.869	24 3 35.6	9.56	15 3 28.1	5 3 35.99	6.865	24 4 8.7	9.49
16	5 5 57.09	6.875	24 7 19.7	9.11	16 3 27.0	5 6 20.81	6.870	24 7 51.1	9.04
17	5 8 42.15	6.880	24 10 53.1	8.66	17 3 25.8	5 9 5.75	6.875	24 11 22.7	8.59
18	5 11 27.34	6.885	24 14 15.6	8.21	18 3 24.6	5 11 50.82	6.880	24 14 43.5	8.14
19	5 14 12.65	6.889	24 17 27.2	7.76	19 3 23.4	5 14 36.01	6.885	24 17 53.4	7.69
20	5 16 58.05	6.894	24 20 27.9	7.30	20 3 22.2	5 17 21.30	6.889	24 20 52.4	7.23
21	5 19 43.57	6.899	24 23 17.6	6.84	21 3 21.0	5 20 6.69	6.893	24 23 40.4	6.78
22	5 22 29.19	6.903	24 25 56.3	6.38	22 3 19.8	5 22 52.18	6.897	24 26 17.5	6.32
23	5 25 14.90	6.907	24 28 24.0	5.92	23 3 18.7	5 25 37.76	6.901	24 28 43.5	5.86
24	5 28 0.70	6.910	24 30 40.7	5.46	24 3 17.5	5 28 23.44	6.905	24 30 58.5	5.40
25	5 30 46.58	6.913	24 32 46.3	5.00	25 3 16.3	5 31 9.20	6.908	24 33 2.5	4.93
26	5 33 32.54	6.916	24 34 40.8	4.54	26 3 15.1	5 33 55.04	6.911	24 34 55.4	4.47
27	5 36 18.56	6.919	24 36 24.1	4.08	27 3 14.0	5 36 40.93	6.913	24 36 37.2	4.01
28	5 39 4.64	6.921	24 37 56.4	3.61	28 3 12.8	5 39 26.88	6.916	24 38 7.9	3.55
29	5 41 50.78	6.923	24 39 17.6	3.15	29 3 11.6	5 42 12.88	6.918	24 39 27.5	3.09
30	5 44 36.95	6.925	24 40 27.7	2.69	30 3 10.4	5 44 58.93	6.920	24 40 36.1	2.63
31	5 47 23.17	+6.927	+24 41 26.6	+ 2.22	31 3 9.3	5 47 45.02	+6.921	+24 41 33.5	+ 2.16

MARS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	5 47 23.17	+6.927	+24 41 26.6	+ 2.22	1 3 9.3	5 47 45.02	+6.921	+24 41 33.5	+ 2.16
2	5 50 9.41	6.928	24 42 14.3	1.76	2 3 8.1	5 50 31.13	6.922	24 42 19.7	1.69
3	5 52 55.68	6.928	24 42 50.8	1.29	3 3 6.9	5 53 17.25	6.922	24 42 54.7	1.23
4	5 55 41.94	6.928	24 43 16.2	0.82	4 3 5.7	5 56 3.38	6.922	24 43 18.7	0.76
5	5 58 28.20	6.928	24 43 30.5	+ 0.36	5 3 4.6	5 58 49.51	6.922	24 43 31.5	+ 0.30
6	6 1 14.45	6.927	24 43 33.6	- 0.10	6 3 3.4	6 1 35.62	6.921	24 43 33.2	- 0.16
7	6 4 0.67	6.926	24 43 25.6	0.57	7 3 2.2	6 4 21.70	6.919	24 43 23.8	0.62
8	6 6 46.85	6.924	24 43 6.4	1.03	8 3 1.1	6 7 7.74	6.918	24 43 3.2	1.09
9	6 9 32.99	6.922	24 42 36.2	1.49	9 2 59.9	6 9 53.74	6.916	24 42 31.6	1.55
10	6 12 19.08	6.920	24 41 54.8	1.95	10 2 58.7	6 12 39.69	6.913	24 41 48.9	2.01
11	6 15 5.11	6.917	24 41 2.4	2.41	11 2 57.6	6 15 25.58	6.911	24 40 55.2	2.47
12	6 17 51.07	6.913	24 39 58.9	2.88	12 2 56.4	6 18 11.40	6.908	24 39 50.4	2.93
13	6 20 36.95	6.910	24 38 44.4	3.34	13 2 55.2	6 20 57.13	6.904	24 38 34.6	3.39
14	6 23 22.74	6.906	24 37 18.8	3.80	14 2 54.0	6 23 42.77	6.900	24 37 7.7	3.85
15	6 26 8.44	6.902	24 35 42.2	4.25	15 2 52.8	6 26 28.32	6.896	24 35 29.9	4.31
16	6 28 54.04	6.898	24 33 54.7	4.71	16 2 51.7	6 29 13.77	6.892	24 33 41.1	4.76
17	6 31 39.54	6.893	24 31 56.2	5.16	17 2 50.5	6 31 59.12	6.887	24 31 41.4	5.21
18	6 34 24.92	6.888	24 29 46.8	5.62	18 2 49.3	6 34 44.36	6.882	24 29 30.9	5.66
19	6 37 10.19	6.883	24 27 26.6	6.07	19 2 48.1	6 37 29.48	6.877	24 27 9.5	6.12
20	6 39 55.33	6.878	24 24 55.5	6.52	20 2 46.9	6 40 14.47	6.872	24 24 37.3	6.57
21	6 42 40.35	6.873	24 22 13.6	6.97	21 2 45.7	6 42 59.34	6.867	24 21 54.2	7.02
22	6 45 25.23	6.867	24 19 20.8	7.42	22 2 44.5	6 45 44.07	6.861	24 19 0.3	7.46
23	6 48 9.98	6.861	24 16 17.3	7.87	23 2 43.3	6 48 28.67	6.855	24 15 55.8	7.91
24	6 50 54.59	6.855	24 13 3.1	8.31	24 2 42.1	6 51 13.12	6.849	24 12 40.5	8.36
25	6 53 39.05	6.849	24 9 38.1	8.76	25 2 40.9	6 53 57.42	6.843	24 9 14.5	8.81
26	6 56 23.36	6.843	24 6 2.5	9.21	26 2 39.7	6 56 41.58	6.836	24 5 37.9	9.25
27	6 59 7.51	6.836	24 2 16.2	9.65	27 2 38.5	6 59 25.58	6.829	24 1 50.7	9.69
28	7 1 51.50	6.829	23 58 19.4	10.09	28 2 37.3	7 2 9.40	6.822	23 57 52.9	10.13
29	7 4 35.31	6.822	23 54 12.0	10.52	29 2 36.1	7 4 53.06	6.815	23 53 44.6	10.57
30	7 7 18.95	6.814	23 49 54.2	10.95	30 2 34.9	7 7 36.54	6.808	23 49 25.8	11.00
31	7 10 2.40	6.807	23 45 25.9	11.39	31 2 33.6	7 10 19.83	6.800	23 44 56.7	11.43
June 1	7 12 45.66	6.799	23 40 47.3	11.83	1 2 32.4	7 13 2.93	6.792	23 40 17.2	11.86
2	7 15 28.73	6.790	23 35 58.3	12.25	2 2 31.2	7 15 45.84	6.784	23 35 27.4	12.29
3	7 18 11.60	6.782	23 30 59.1	12.68	3 2 30.0	7 18 28.54	6.775	23 30 27.3	12.72
4	7 20 54.24	6.773	23 25 49.6	13.10	4 2 28.8	7 21 11.03	6.766	23 25 17.1	13.13
5	7 23 36.66	6.763	23 20 30.1	13.52	5 2 27.5	7 23 53.29	6.756	23 19 56.8	13.55
6	7 26 18.86	6.753	23 15 0.4	13.94	6 2 26.3	7 26 35.32	6.746	23 14 26.4	13.97
7	7 29 0.82	6.743	23 9 20.8	14.36	7 2 25.0	7 29 17.12	6.736	23 8 46.0	14.38
8	7 31 42.54	6.733	23 3 31.2	14.76	8 2 23.8	7 31 58.68	6.726	23 2 55.8	14.79
9	7 34 24.03	6.723	22 57 31.9	15.17	9 2 22.6	7 34 40.00	6.716	22 56 55.8	15.20
10	7 37 5.26	6.712	22 51 22.7	15.58	10 2 21.3	7 37 21.07	6.705	22 50 46.0	15.61
11	7 39 46.24	6.701	22 45 3.8	15.99	11 2 20.0	7 40 1.89	6.695	22 44 26.4	16.01
12	7 42 26.97	6.691	22 38 35.2	16.39	12 2 18.8	7 42 42.45	6.685	22 37 57.2	16.41
13	7 45 7.43	6.681	22 31 57.0	16.79	13 2 17.5	7 45 22.75	6.674	22 31 18.5	16.81
14	7 47 47.64	6.670	22 25 9.2	17.18	14 2 16.2	7 48 2.79	6.663	22 24 30.2	17.21
15	7 50 27.58	6.659	22 18 12.0	17.58	15 2 15.0	7 50 42.57	6.652	22 17 32.5	17.60
16	7 53 7.25	6.648	22 11 5.4	17.97	16 2 13.7	7 53 22.07	6.640	22 10 25.4	18.00
17	7 55 46.66	6.636	22 3 49.4	18.35	17 2 12.4	7 56 1.31	6.629	22 3 8.9	18.38
18	7 58 25.79	6.625	21 56 24.2	18.74	18 2 11.1	7 58 40.27	6.618	21 55 43.2	18.76
19	8 1 4.66	6.614	21 48 49.7	19.13	19 2 9.8	8 1 18.97	6.607	21 48 8.3	19.14
20	8 3 43.26	6.602	21 41 6.1	19.50	20 2 8.5	8 3 57.40	6.595	21 40 24.3	19.52
21	8 6 21.59	6.591	21 33 13.4	19.88	21 2 7.2	8 6 35.56	6.584	21 32 31.2	19.90
22	8 8 59.65	6.581	21 25 11.7	20.26	22 2 5.9	8 9 13.45	6.573	21 24 29.2	20.27
23	8 11 37.44	6.570	21 17 1.1	20.62	23 2 4.6	8 11 51.07	6.562	21 16 18.2	20.64
24	8 14 14.95	6.558	21 8 41.6	20.99	24 2 3.2	8 14 28.42	6.551	21 7 58.4	21.00
25	8 16 52.19	6.546	21 0 13.4	21.36	25 2 1.9	8 17 5.49	6.539	20 59 29.9	21.37
26	8 19 29.16	6.535	20 51 36.4	21.72	26 2 0.6	8 19 42.30	6.528	20 50 52.7	21.73
27	8 22 5.86	6.523	20 42 50.8	22.08	27 1 59.3	8 22 18.83	6.516	20 42 6.9	22.09
28	8 24 42.27	6.511	20 33 56.6	22.43	28 1 57.9	8 24 55.07	6.504	20 33 12.5	22.44
29	8 27 18.40	6.499	20 24 53.9	22.79	29 1 56.6	8 27 31.03	6.492	20 24 9.6	22.80
30	8 29 54.24	6.487	20 15 42.8	23.13	30 1 55.3	8 30 6.70	6.480	20 14 58.4	23.13
31	8 32 29.79	+6.475	+20 6 23.5	-23.47	31 1 53.9	8 32 42.09	+6.468	+20 5 38.9	-23.47

Date. 1878.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	8 32 29.79	+6.475	+20 6 23.5	-23.47	1 1 53.9	8 32 42.09	+6.468	+20 5 38.9	-23.47
2	8 35 5.06	6.463	19 56 55.9	23.81	2 1 52.6	8 35 17.19	6.456	19 56 11.3	23.82
3	8 37 40.04	6.451	19 47 20.3	24.15	3 1 51.2	8 37 52.00	6.444	19 46 35.6	24.16
4	8 40 14.73	6.439	19 37 36.7	24.48	4 1 49.8	8 40 26.52	6.432	19 36 51.9	24.48
5	8 42 49.13	6.427	19 27 45.2	24.81	5 1 48.5	8 43 0.75	6.420	19 27 0.3	24.81
6	8 45 23.23	6.415	19 17 45.8	25.13	6 1 47.1	8 45 34.68	6.408	19 17 1.0	25.13
7	8 47 57.03	6.403	19 7 38.7	25.45	7 1 45.7	8 48 8.31	6.395	19 6 53.9	25.46
8	8 50 30.54	6.390	18 57 23.9	25.77	8 1 44.3	8 50 41.65	6.383	18 56 39.1	25.77
9	8 53 3.76	6.378	18 47 1.5	26.09	9 1 43.0	8 53 14.70	6.371	18 46 16.7	26.09
10	8 55 36.69	6.366	18 36 31.6	26.40	10 1 41.6	8 55 47.46	6.358	18 35 46.9	26.40
11	8 58 9.32	6.353	18 25 54.3	26.71	11 1 40.2	8 58 19.92	6.346	18 25 9.7	26.70
12	9 0 41.66	6.341	18 15 9.7	27.00	12 1 38.8	9 0 52.09	6.334	18 14 25.3	27.00
13	9 3 13.70	6.329	18 4 18.0	27.30	13 1 37.4	9 3 23.96	6.322	18 3 33.7	27.30
14	9 5 45.46	6.317	17 53 19.0	27.60	14 1 35.9	9 5 55.56	6.311	17 52 34.8	27.60
15	9 8 16.94	6.306	17 42 13.0	27.90	15 1 34.5	9 8 26.87	6.299	17 41 29.0	27.89
16	9 10 48.14	6.294	17 30 59.9	28.19	16 1 33.1	9 10 57.90	6.287	17 30 16.2	28.17
17	9 13 19.06	6.283	17 19 40.0	28.47	17 1 31.7	9 13 28.66	6.276	17 18 56.5	28.46
18	9 15 49.71	6.272	17 8 13.2	28.76	18 1 30.2	9 15 59.14	6.264	17 7 30.0	28.74
19	9 18 20.09	6.261	16 56 39.7	29.04	19 1 28.8	9 18 29.36	6.253	16 55 56.8	29.03
20	9 20 50.21	6.249	16 44 59.5	29.32	20 1 27.4	9 20 59.31	6.242	16 44 16.8	29.30
21	9 23 20.05	6.238	16 33 12.7	29.59	21 1 25.9	9 23 28.99	6.231	16 32 30.3	29.57
22	9 25 49.65	6.227	16 21 19.3	29.86	22 1 24.5	9 25 58.42	6.221	16 20 37.2	29.84
23	9 28 19.00	6.217	16 9 19.4	30.13	23 1 23.0	9 28 27.60	6.210	16 8 37.7	30.11
24	9 30 48.09	6.207	15 57 13.2	30.39	24 1 21.6	9 30 56.53	6.200	15 56 31.9	30.37
25	9 33 16.93	6.196	15 45 0.7	30.65	25 1 20.1	9 33 25.20	6.189	15 44 19.8	30.63
26	9 35 45.51	6.186	15 32 42.0	30.90	26 1 18.6	9 35 53.61	6.179	15 32 1.5	30.88
27	9 38 13.85	6.176	15 20 17.3	31.15	27 1 17.2	9 38 21.79	6.169	15 19 37.2	31.13
28	9 40 41.95	6.166	15 7 46.6	31.40	28 1 15.7	9 40 49.72	6.159	15 7 7.0	31.38
29	9 43 9.80	6.156	14 55 10.0	31.65	29 1 14.2	9 43 17.41	6.149	14 54 30.9	31.63
30	9 45 37.42	6.146	14 42 27.6	31.88	30 1 12.7	9 45 44.86	6.139	14 41 49.0	31.87
31	9 48 4.81	6.136	14 29 39.5	32.11	31 1 11.3	9 48 12.09	6.129	14 29 1.4	32.10
Aug. 1	9 50 31.95	6.126	14 16 45.8	32.35	1 1 9.8	9 50 39.07	6.119	14 16 8.2	32.33
2	9 52 58.86	6.116	14 3 46.6	32.58	2 1 8.3	9 53 5.82	6.109	14 3 9.6	32.56
3	9 55 25.54	6.107	13 50 42.0	32.80	3 1 6.8	9 55 32.34	6.100	13 50 5.5	32.78
4	9 57 51.99	6.097	13 37 32.0	33.03	4 1 5.3	9 57 58.62	6.090	13 36 56.1	33.00
5	10 0 18.21	6.088	13 24 16.9	33.24	5 1 3.8	10 0 24.68	6.081	13 23 41.5	33.21
6	10 2 44.21	6.078	13 10 56.6	33.45	6 1 2.3	10 2 50.52	6.072	13 10 21.8	33.42
7	10 5 10.00	6.069	12 57 31.3	33.65	7 1 0.8	10 5 16.15	6.063	12 56 57.2	33.63
8	10 7 35.58	6.061	12 44 1.2	33.86	8 0 59.3	10 7 41.57	6.054	12 43 27.7	33.83
9	10 10 0.94	6.053	12 30 26.1	34.06	9 0 57.7	10 10 6.76	6.046	12 29 53.3	34.04
10	10 12 26.11	6.045	12 16 46.3	34.26	10 0 56.2	10 12 31.77	6.038	12 16 14.2	34.23
11	10 14 51.07	6.036	12 3 1.7	34.45	11 0 54.7	10 14 56.57	6.029	12 2 30.4	34.42
12	10 17 15.84	6.028	11 49 12.6	34.64	12 0 53.1	10 17 21.18	6.022	11 48 41.9	34.61
13	10 19 40.43	6.021	11 35 18.8	34.83	13 0 51.6	10 19 45.61	6.014	11 34 48.9	34.80
14	10 22 4.84	6.013	11 21 20.7	35.01	14 0 50.1	10 22 9.86	6.007	11 20 51.5	34.98
15	10 24 29.07	6.006	11 7 18.1	35.20	15 0 48.5	10 24 33.93	6.000	11 6 49.7	35.16
16	10 26 53.13	5.999	10 53 11.2	35.38	16 0 47.0	10 26 57.83	5.993	10 52 43.6	35.34
17	10 29 17.03	5.993	10 39 0.1	35.55	17 0 45.5	10 29 21.57	5.986	10 38 33.2	35.52
18	10 31 40.79	5.987	10 24 44.9	35.72	18 0 43.9	10 31 45.17	5.980	10 24 18.7	35.69
19	10 34 4.40	5.980	10 10 25.6	35.89	19 0 42.4	10 34 8.62	5.973	10 10 0.2	35.85
20	10 36 27.85	5.974	9 56 2.2	36.05	20 0 40.8	10 36 31.91	5.968	9 55 37.7	36.01
21	10 38 51.18	5.969	9 41 34.9	36.21	21 0 39.3	10 38 55.08	5.962	9 41 11.3	36.18
22	10 41 14.38	5.963	9 27 3.8	36.37	22 0 37.7	10 41 18.12	5.957	9 26 41.0	36.34
23	10 43 37.44	5.958	9 12 29.0	36.53	23 0 36.2	10 43 41.03	5.951	9 12 7.0	36.49
24	10 46 0.38	5.953	8 57 50.7	36.68	24 0 34.6	10 46 3.81	5.946	8 57 29.5	36.64
25	10 48 23.20	5.949	8 43 8.7	36.82	25 0 33.0	10 48 26.47	5.941	8 42 48.5	36.79
26	10 50 45.91	5.943	8 28 23.4	36.95	26 0 31.5	10 50 49.02	5.937	8 28 4.0	36.92
27	10 53 8.51	5.939	8 13 34.7	37.09	27 0 29.9	10 53 11.46	5.934	8 13 16.2	37.05
28	10 55 31.01	5.936	7 58 42.8	37.23	28 0 28.3	10 55 33.81	5.930	7 58 25.2	37.19
29	10 57 53.42	5.932	7 43 47.7	37.36	29 0 26.8	10 57 56.06	5.925	7 43 31.0	37.32
30	11 0 15.73	5.928	7 28 49.5	37.48	30 0 25.2	11 0 18.21	5.921	7 28 33.8	37.44
31	11 2 37.95	+5.924	+7 13 48.4	-37.61	31 0 23.6	11 2 40.27	+5.918	+ 7 13 33.6	-37.56

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	11 5 0.09	+5.921	+6 58 44.4	-37.73	1 0 22.1	11 5 2.26	+5.915	+6 58 30.5	-37.68
2	11 7 22.14	5.917	6 43 37.7	37.84	2 0 20.5	11 7 24.16	5.911	6 43 24.8	37.79
3	11 9 44.11	5.914	6 28 28.4	37.94	3 0 18.9	11 9 45.97	5.908	6 28 16.4	37.90
4	11 12 6.01	5.911	6 13 16.5	38.05	4 0 17.3	11 12 7.71	5.905	6 13 5.4	38.01
5	11 14 27.85	5.909	5 58 2.1	38.15	5 0 15.8	11 14 29.40	5.902	5 57 52.0	38.11
6	11 16 49.63	5.906	5 42 45.3	38.24	6 0 14.2	11 16 51.02	5.900	5 42 36.2	38.20
7	11 19 11.35	5.904	5 27 26.1	38.34	7 0 12.6	11 19 12.59	5.898	5 27 18.1	38.30
8	11 21 33.03	5.902	5 12 4.8	38.43	8 0 11.0	11 21 34.11	5.896	5 11 57.7	38.39
9	11 23 54.67	5.901	4 56 41.3	38.52	9 0 9.5	11 23 55.59	5.894	4 56 35.2	38.48
10	11 26 16.28	5.900	4 41 15.8	38.60	10 0 7.9	11 26 17.05	5.893	4 41 10.7	38.56
11	11 28 37.87	5.899	4 25 48.4	38.68	11 0 6.3	11 28 38.48	5.893	4 25 44.3	38.64
12	11 30 59.44	5.898	4 10 19.0	38.76	12 0 4.7	11 30 59.90	5.892	4 10 16.0	38.72
13	11 33 21.00	5.898	3 54 47.8	38.84	13 0 3.1	11 33 21.30	5.892	3 54 45.8	38.80
14	11 35 42.56	5.898	3 39 14.8	38.91	14 0 1.5	11 35 42.71	5.892	3 39 13.8	38.87
15	11 38 4.12	5.899	3 23 40.2	38.98	15 0 0.0	11 38 4.11	5.892	3 23 40.2	38.93
					23 58.4	11 40 25.54	5.893	3 8 4.9	39.00
16	11 40 25.70	5.900	3 8 3.9	39.05	16 23 56.8	11 42 47.00	5.894	2 52 28.2	39.06
17	11 42 47.31	5.901	2 52 26.1	39.11	17 23 55.2	11 45 8.48	5.896	2 36 50.0	39.12
18	11 45 8.94	5.902	2 36 46.9	39.17	18 23 53.6	11 47 29.99	5.898	2 21 10.5	39.17
19	11 47 30.62	5.904	2 21 6.3	39.22	19 23 52.1	11 49 51.55	5.900	2 5 29.8	39.22
20	11 49 52.33	5.906	2 5 24.6	39.27	20 23 50.5	11 52 13.16	5.902	1 49 47 9	39.27
21	11 52 14.09	5.908	1 49 41.7	39.31	21 23 48.9	11 54 34.81	5.904	1 34 5.0	39.31
22	11 54 35.90	5.910	1 33 57.8	39.35	22 23 47.3	11 56 56.52	5.906	1 18 21.2	39.34
23	11 56 57.77	5.912	1 18 12.9	39.38	23 23 45.8	11 59 18.30	5.909	1 2 36.6	39.37
24	11 59 19.71	5.915	1 2 27.2	39.41	24 23 44.2	12 1 40.16	5.912	0 46 51.2	39.40
25	12 1 41.72	5.919	0 46 40.8	39.44	25 23 42.6	12 4 2.09	5.916	0 31 5.2	39.42
26	12 4 3.81	5.922	0 30 53.8	39.46	26 23 41.0	12 6 24.11	5.919	+0 15 18.8	39.44
27	12 6 25.98	5.926	+0 15 6.3	39.48	27 23 39.5	12 8 46.21	5.923	-0 0 28.1	39.46
28	12 8 48.23	5.929	-0 0 41.6	39.50	28 23 37.9	12 11 8.40	5.927	0 16 15.4	39.47
29	12 11 10.58	5.933	0 16 29.9	39.51	29 23 36.3	12 13 30.68	5.931	0 32 2.9	39.47
30	12 13 33.02	5.937	0 32 18.4	39.52	30 23 34.8	12 15 53.07	5.936	0 47 50.4	39.47
Oct. 1	12 15 55.56	5.941	0 48 6.9	39.52	1 23 33.2	12 18 15.57	5.940	1 3 37.9	39.47
2	12 18 18.22	5.946	1 3 55.5	39.52	2 23 31.6	12 20 38.19	5.945	1 19 25.3	39.47
3	12 20 40.99	5.951	1 19 44.0	39.51	3 23 30.1	12 23 0.93	5.950	1 35 12.6	39.46
4	12 23 3.89	5.956	1 35 32.3	39.50	4 23 28.5	12 25 23.79	5.955	1 50 59.6	39.45
5	12 25 26.91	5.962	1 51 20.3	39.49	5 23 27.0	12 27 46.79	5.961	2 6 46.2	39.43
6	12 27 50.07	5.967	2 7 7.9	39.47	6 23 25.4	12 30 9.93	5.967	2 22 32.4	39.41
7	12 30 13.37	5.973	2 22 55.1	39.45	7 23 23.9	12 32 33.21	5.973	2 38 18.0	39.38
8	12 32 36.81	5.979	2 38 41.7	39.42	8 23 22.3	12 34 56.64	5.980	2 54 2.9	39.36
9	12 35 0.40	5.986	2 54 27.7	39.39	9 23 20.8	12 37 20.25	5.987	3 9 47.1	39.33
10	12 37 24.17	5.994	3 10 12.9	39.36	10 23 19.2	12 39 44.04	5.995	3 25 30.5	39.29
11	12 39 48.12	6.002	3 25 57.2	39.33	11 23 17.7	12 42 8.01	6.003	3 41 13.0	39.25
12	12 42 12.25	6.009	3 41 40.7	39.30	12 23 16.2	12 44 32.17	6.011	3 56 54.5	39.21
13	12 44 36.57	6.017	3 57 23.3	39.25	13 23 14.6	12 46 56.52	6.019	4 12 35.0	39.17
14	12 47 1.08	6.026	4 13 4.7	39.20	14 23 13.1	12 49 21.08	6.028	4 28 14.3	39.11
15	12 49 25.79	6.034	4 28 44.9	39.15	15 23 11.6	12 51 45.85	6.037	4 43 52.3	39.05
16	12 51 50.73	6.044	4 44 23 8	39.10	16 23 10.0	12 54 10.84	6.046	4 59 28.9	38.99
17	12 54 15.88	6.053	5 0 1.3	39.04	17 23 8.5	12 56 36.06	6.056	5 15 4.0	38.93
18	12 56 41.26	6.062	5 15 37.4	38.97	18 23 7.0	12 59 1.52	6.065	5 30 37.5	38.86
19	12 59 6.88	6.072	5 31 12.0	38.90	19 23 5.5	13 1 27.22	6.075	5 46 9.4	38.79
20	13 1 32.74	6.082	5 46 44.7	38.83	20 23 4.0	13 3 53.16	6.085	6 1 39.5	38.71
21	13 3 58.84	6.093	6 2 15.6	38.75	21 23 2.5	13 6 19.34	6.096	6 17 7.6	38.62
22	13 6 25.19	6.103	6 17 44.6	38.66	22 23 1.0	13 8 45.79	6.107	6 32 33.6	38.54
23	13 8 51.80	6.114	6 33 11.5	38.57	23 22 59.5	13 11 12.51	6.119	6 47 57.5	38.45
24	13 11 18.68	6.125	6 48 36.3	38.48	24 22 58.0	13 13 39.49	6.130	7 3 19.1	38.35
25	13 13 45.82	6.137	7 3 58.7	38.38	25 22 56.5	13 16 6.74	6.141	7 18 38.3	38.24
26	13 16 13.24	6.148	7 19 18.7	38.28	26 22 55.1	13 18 34.26	6.153	7 33 55.0	38.13
27	13 18 40.93	6.160	7 34 36.2	38.17	27 22 53.6	13 21 2.07	6.165	7 49 9.0	38.03
28	13 21 8.90	6.172	7 49 51.1	38.06	28 22 52.1	13 23 30.17	6.177	8 4 20.3	37.91
29	13 23 37.16	6.183	8 5 3.3	37.95	29 22 50.7	13 25 58.55	6.189	8 19 28.8	37.79
30	13 26 5.71	6.195	8 20 12.5	37.82	30 22 49.2	13 28 27.23	6.201	8 34 34.2	37.66
31	13 28 34.56	6.208	8 35 18.7	37.69	31 22 47.7	13 30 56.22	6.214	8 49 36.5	37.53
32	13 31 3.70	+6.221	-8 50 21.8	-37.56	32 22 46.3	13 33 25.51	+6.226	-9 4 35.6	-37.40

Date. 1878.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	13 31 3.70	+6.221	−8 50 21.8	−37.56	1 22 46.3	13 33 25.51	+6.226	−9 4 35.6	−37.40
2	13 33 33.16	6.234	9 5 21.6	37.42	2 22 44.8	13 35 55.11	6.239	9 19 31.5	37.25
3	13 36 2.93	6.247	9 20 18.2	37.28	3 22 43.4	13 38 25.03	6.254	9 34 24.0	37.11
4	13 38 33.02	6.261	9 35 11.4	37.14	4 22 42.0	13 40 55.29	6.268	9 49 12.9	36.96
5	13 41 3.45	6.275	9 50 1.0	36.99	5 22 40.5	13 43 25.88	6.282	10 3 58.1	36.81
6	13 43 34.21	6.289	10 4 46.9	36.84	6 22 39.1	13 45 56.81	6.296	10 18 39.6	36.65
7	13 46 5.31	6.303	10 19 29.1	36.68	7 22 37.7	13 48 28.09	6.311	10 33 17.4	36.49
8	13 48 36.76	6.317	10 34 7.5	36.52	8 22 36.3	13 50 59.73	6.325	10 47 51.2	36.32
9	13 51 8.56	6.332	10 48 41.9	36.35	9 22 34.9	13 53 31.73	6.340	11 2 20.8	36.15
10	13 53 40.72	6.347	11 3 12.1	36.17	10 22 33.5	13 56 4.09	6.356	11 16 46.2	35.97
11	13 56 13.26	6.363	11 17 38.2	35.99	11 22 32.1	13 58 36.83	6.372	11 31 7.4	35.78
12	13 58 46.17	6.379	11 31 59.9	35.81	12 22 30.7	14 1 9.96	6.389	11 45 24.2	35.60
13	14 1 19.47	6.396	11 46 17.2	35.62	13 22 29.3	14 3 43.48	6.405	11 59 36.4	35.41
14	14 3 53.16	6.412	12 0 30.0	35.43	14 22 27.9	14 6 17.39	6.421	12 13 44.0	35.22
15	14 6 27.24	6.429	12 14 38.1	35.24	15 22 26.6	14 8 51.69	6.437	12 27 46.9	35.02
16	14 9 1.72	6.445	12 28 41.4	35.04	16 22 25.2	14 11 26.41	6.454	12 41 44.9	34.81
17	14 11 36.61	6.462	12 42 39.9	34.83	17 22 23.9	14 14 1.53	6.472	12 55 37.8	34.59
18	14 14 11.91	6.479	12 56 33.3	34.61	18 22 22.5	14 16 37.08	6.490	13 9 25.6	34.38
19	14 16 47.62	6.497	13 10 21.5	34.39	19 22 21.2	14 19 13.04	6.507	13 23 8.1	34.16
20	14 19 23.76	6.514	13 24 4.4	34.17	20 22 19.8	14 21 49.41	6.524	13 36 45.2	33.93
21	14 22 0.31	6.532	13 37 41.8	33.95	21 22 18.5	14 24 26.21	6.543	13 50 16.7	33.69
22	14 24 37.28	6.550	13 51 13.7	33.71	22 22 17.2	14 27 3.44	6.561	14 3 42.6	33.46
23	14 27 14.69	6.568	14 4 39.9	33.47	23 22 15.9	14 29 41.10	6.579	14 17 2.7	33.21
24	14 29 52.52	6.585	14 18 0.3	33.22	24 22 14.6	14 32 19.19	6.596	14 30 16.8	32.96
25	14 32 30.79	6.603	14 31 14.7	32.97	25 22 13.3	14 34 57.71	6.614	14 43 24.8	32.70
26	14 35 9.49	6.621	14 44 23.0	32.71	26 22 12.0	14 37 36.67	6.632	14 56 26.5	32.43
27	14 37 48.62	6.640	14 57 24.9	32.45	27 22 10.7	14 40 16.06	6.651	15 9 21.9	32.17
28	14 40 28.19	6.658	15 10 20.5	32.18	28 22 9.4	14 42 55.90	6.669	15 22 10.8	31.90
29	14 43 8.20	6.677	15 23 9.5	31.90	29 22 8.2	14 45 36.18	6.687	15 34 53.1	31.62
30	14 45 48.66	6.695	15 35 52.0	31.63	30 22 6.9	14 48 16.91	6.706	15 47 28.6	31.33
Dec. 1	14 48 29.56	6.713	15 48 27.7	31.34	1 22 5.7	14 50 58.09	6.725	15 59 57.2	31.05
2	14 51 10.91	6.732	16 0 56.5	31.05	2 22 4.4	14 53 39.71	6.744	16 12 19.0	30.75
3	14 53 52.71	6.751	16 13 18.3	30.76	3 22 3.2	14 56 21.80	6.763	16 24 33.6	30.46
4	14 56 34.97	6.771	16 25 33.0	30.46	4 22 2.0	14 59 4.35	6.783	16 36 41.0	30.15
5	14 59 17.70	6.790	16 37 40.4	30.15	5 22 0.7	15 1 47.35	6.802	16 48 41.0	29.84
6	15 2 0.88	6.809	16 49 40.4	29.84	6 21 59.5	15 4 30.83	6.821	17 0 33.5	29.52
7	15 4 44.53	6.828	17 1 32.8	29.52	7 21 58.3	15 7 14.78	6.841	17 12 18.4	29.21
8	15 7 28.66	6.848	17 13 17.6	29.21	8 21 57.1	15 9 59.20	6.860	17 23 55.6	28.89
9	15 10 13.26	6.868	17 24 54.7	28.88	9 21 55.9	15 12 44.09	6.880	17 35 25.0	28.56
10	15 12 58.33	6.888	17 36 24.1	28.55	10 21 54.7	15 15 29.46	6.901	17 46 46.5	28.22
11	15 15 43.88	6.909	17 47 45.4	28.21	11 21 53.6	15 18 15.32	6.921	17 57 59.9	27.89
12	15 18 29.92	6.929	17 58 58.6	27.87	12 21 52.4	15 21 1.68	6.941	18 9 5.0	27.54
13	15 21 16.45	6.949	18 10 3.6	27.53	13 21 51.2	15 23 48.52	6.962	18 20 1.7	27.18
14	15 24 3.47	6.969	18 21 0.1	27.18	14 21 50.1	15 26 35.85	6.982	18 30 50.0	26.83
15	15 26 50.98	6.989	18 31 48.1	26.82	15 21 48.9	15 29 23.66	7.002	18 41 29.6	26.47
16	15 29 38.97	7.010	18 42 27.4	26.46	16 21 47.8	15 32 11.96	7.023	18 52 0.4	26.09
17	15 32 27.45	7.030	18 52 57.9	26.08	17 21 46.7	15 35 0.75	7.043	19 2 22.3	25.72
18	15 35 16.42	7.050	19 3 19.5	25.70	18 21 45.6	15 37 50.02	7.063	19 12 35.1	25.34
19	15 38 5.86	7.070	19 13 31.9	25.33	19 21 44.5	15 40 39.78	7.083	19 22 38.8	24.96
20	15 40 55.80	7.090	19 23 35.2	24.94	20 21 43.3	15 43 30.02	7.103	19 32 33.1	24.56
21	15 43 46.21	7.110	19 33 29.0	24.54	21 21 42.2	15 46 20.74	7.123	19 42 17.9	24.17
22	15 46 37.11	7.130	19 43 13.4	24.14	22 21 41.1	15 49 11.93	7.143	19 51 53.1	23.76
23	15 49 28.47	7.150	19 52 48.1	23.74	23 21 40.1	15 52 3.59	7.162	20 1 18.6	23.35
24	15 52 20.31	7.170	20 2 13.1	23.33	24 21 39.0	15 54 55.71	7.181	20 10 34.3	22.94
25	15 55 12.60	7.189	20 11 28.2	22.92	25 21 38.0	15 57 48.29	7.200	20 19 40.0	22.53
26	15 58 5.35	7.207	20 20 33.4	22.51	26 21 36.9	16 0 41.33	7.219	20 28 35.7	22.11
27	16 0 58.57	7.226	20 29 28.4	22.08	27 21 35.9	16 3 34.83	7.239	20 37 21.2	21.68
28	16 3 52.24	7.246	20 38 13.3	21.65	28 21 34.8	16 6 28.79	7.258	20 45 56.3	21.24
29	16 6 46.37	7.265	20 46 47.7	21.21	29 21 33.8	16 9 23.19	7.276	20 54 20.9	20.80
30	16 9 40.94	7.284	20 55 11.6	20.77	30 21 32.7	16 12 18.04	7.295	21 2 34.9	20.36
31	16 12 35.96	7.302	21 3 24.9	20.33	31 21 31.7	16 15 13.33	7.313	21 10 38.3	19.92
32	16 15 31.41	+7.319	−21 11 27.5	−19.88	32 21 30.7	16 18 9.06	+7.331	−21 18 30.9	−19.46

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	19 2 6.63	+2.511	-22 47 59.4	+3.48	1 0 17.2	19 2 7.35	+2.506	-22 47 58.4	+3.48
2	19 3 6.90	2.511	22 46 35.1	3.54	2 0 14.3	19 3 7.50	2.506	22 46 34.2	3.54
3	19 4 7.18	2.511	22 45 9.3	3.60	3 0 11.4	19 4 7.66	2.506	22 45 8.6	3.60
4	19 5 7.46	2.511	22 43 42.1	3.66	4 0 8.5	19 5 7.81	2.506	22 43 41.6	3.66
5	19 6 7.72	2.510	22 42 13.5	3.72	5 0 5.5	19 6 7.95	2.505	22 42 13.2	3.72
6	19 7 7.96	2.509	22 40 43.5	3.78	6 0 2.6	19 7 8.06	2.504	22 40 43.4	3.77
					6 23 59.6	19 8 8.16	2.503	22 39 12.1	3.83
7	19 8 8.18	2.508	22 39 12.1	3.84	7 23 56.7	19 9 8.24	2.502	22 37 39.5	3.88
8	19 9 8.38	2.507	22 37 39.4	3.89	8 23 53.7	19 10 8.28	2.501	22 36 5.6	3.94
9	19 10 8.54	2.506	22 36 5.3	3.95	9 23 50.8	19 11 8.28	2.499	22 34 30.4	4.00
10	19 11 8.66	2.504	22 34 29.9	4.00	10 23 47.9	19 12 8.23	2.497	22 32 53.9	4.05
11	19 12 8.73	2.502	22 32 53.1	4.06	11 23 45.0	19 13 8.12	2.494	22 31 16.1	4.11
12	19 13 8.75	2.499	22 31 15.0	4.11	12 23 42.0	19 14 7.95	2.491	22 29 36.9	4.16
13	19 14 8.70	2.496	22 29 35.7	4.17	13 23 39.1	19 15 7.72	2.488	22 27 56.5	4.21
14	19 15 8.58	2.493	22 27 55.1	4.22	14 23 36.2	19 16 7.41	2.485	22 26 14.9	4.26
15	19 16 8.39	2.490	22 26 13.2	4.27	15 23 33.2	19 17 7.02	2.482	22 24 32.0	4.31
16	19 17 8.12	2.487	22 24 30.1	4.32	16 23 30.3	19 18 6.54	2.478	22 22 47.9	4.36
17	19 18 7.77	2.483	22 22 45.7	4.37	17 23 27.3	19 19 5.98	2.474	22 21 2.5	4.41
18	19 19 7.33	2.479	22 21 0.1	4.42	18 23 24.4	19 20 5.33	2.470	22 19 16.0	4.46
19	19 20 6.80	2.475	22 19 13.3	4.47	19 23 21.4	19 21 4.58	2.466	22 17 28.3	4.51
20	19 21 6.17	2.471	22 17 25.4	4.52	20 23 18.5	19 22 3.73	2.462	22 15 39.5	4.56
21	19 22 5.43	2.467	22 15 36.3	4.57	21 23 15.5	19 23 2.76	2.457	22 13 49.5	4.61
22	19 23 4.59	2.462	22 13 46.0	4.61	22 23 12.6	19 24 1.69	2.452	22 11 58.3	4.66
23	19 24 3.63	2.457	22 11 54.6	4.66	23 23 9.6	19 25 0.49	2.447	22 10 6.1	4.70
24	19 25 2.55	2.452	22 10 2.1	4.71	24 23 6.7	19 25 59.17	2.442	22 8 12.8	4.75
25	19 26 1.35	2.447	22 8 8.6	4.75	25 23 3.7	19 26 57.72	2.436	22 6 18.5	4.79
26	19 27 0.01	2.441	22 6 14.0	4.80	26 23 0.7	19 27 56.13	2.430	22 4 23.1	4.83
27	19 27 58.54	2.435	22 4 18.3	4.84	27 22 57.8	19 28 54.40	2.424	22 2 26.6	4.87
28	19 28 56.92	2.429	22 2 21.6	4.89	28 22 54.8	19 29 52.52	2.418	22 0 29.1	4.91
29	19 29 55.15	2.423	22 0 23.8	4.93	29 22 51.8	19 30 50.48	2.411	21 58 30.7	4.95
30	19 30 53.22	2.416	21 58 25.1	4.97	30 22 48.8	19 31 48.27	2.404	21 56 31.4	4.99
31	19 31 51.13	2.409	21 56 25.4	5.01	31 22 45.9	19 32 45.89	2.397	21 54 31.1	5.03
Feb. 1	19 32 48.86	2.402	21 54 24.8	5.05	1 22 42.9	19 33 43.34	2.390	21 52 29.9	5.07
2	19 33 46.42	2.395	21 52 23.4	5.08	2 22 39.9	19 34 40.61	2.382	21 50 27.9	5.10
3	19 34 43.79	2.387	21 50 21.1	5.12	3 22 36.9	19 35 37.68	2.374	21 48 25.1	5.14
4	19 35 40.97	2.379	21 48 18.0	5.15	4 22 34.0	19 36 34.55	2.366	21 46 21.5	5.17
5	19 36 37.96	2.371	21 46 14.1	5.18	5 22 31.0	19 37 31.23	2.357	21 44 17.1	5.20
6	19 37 34.74	2.362	21 44 9.5	5.21	6 22 28.0	19 38 27.70	2.348	21 42 12.1	5.23
7	19 38 31.31	2.353	21 42 4.1	5.24	7 22 25.0	19 39 23.95	2.339	21 40 6.3	5.26
8	19 39 27.67	2.344	21 39 58.0	5.27	8 22 22.0	19 40 19.98	2.330	21 37 59.9	5.29
9	19 40 23.80	2.334	21 37 51.3	5.29	9 22 19.0	19 41 15.79	2.321	21 35 52.9	5.31
10	19 41 19.71	2.324	21 35 43.9	5.32	10 22 16.0	19 42 11.37	2.311	21 33 45.2	5.34
11	19 42 15.38	2.314	21 33 35.9	5.34	11 22 13.0	19 43 6.70	2.301	21 31 36.9	5.36
12	19 43 10.81	2.304	21 31 27.3	5.37	12 22 10.0	19 44 1.79	2.291	21 29 28.0	5.38
13	19 44 6.00	2.294	21 29 18.1	5.39	13 22 6.9	19 44 56.64	2.281	21 27 18.6	5.40
14	19 45 0.94	2.284	21 27 8.4	5.41	14 22 3.9	19 45 51.23	2.270	21 25 8.7	5.42
15	19 45 55.63	2.273	21 24 58.2	5.43	15 22 0.9	19 46 45.57	2.259	21 22 58.4	5.44
16	19 46 50.07	2.262	21 22 47.5	5.45	16 21 57.9	19 47 39.65	2.248	21 20 47.6	5.45
17	19 47 44.24	2.251	21 20 36.4	5.47	17 21 54.8	19 48 33.46	2.237	21 18 36.4	5.47
18	19 48 38.14	2.240	21 18 24.9	5.49	18 21 51.8	19 49 27.00	2.225	21 16 24.8	5.49
19	19 49 31.77	2.229	21 16 13.0	5.50	19 21 48.7	19 50 20.26	2.213	21 14 12.9	5.50
20	19 50 25.11	2.217	21 14 0.8	5.52	20 21 45.7	19 51 13.23	2.201	21 12 0.7	5.51
21	19 51 18.17	2.205	21 11 48.2	5.53	21 21 42.6	19 52 5.92	2.189	21 9 48.1	5.52
22	19 52 10.94	2.193	21 9 35.4	5.54	22 21 39.6	19 52 58.31	2.177	21 7 35.3	5.53
23	19 53 3.41	2.180	21 7 22.3	5.55	23 21 36.5	19 53 50.40	2.164	21 5 22.3	5.54
24	19 53 55.58	2.167	21 5 9.0	5.56	24 21 33.5	19 54 42.18	2.151	21 3 9.1	5.55
25	19 54 47.44	2.154	21 2 55.5	5.56	25 21 30.4	19 55 33.65	2.138	21 0 55.8	5.55
26	19 55 38.99	2.141	21 0 41.9	5.57	26 21 27.3	19 56 24.80	2.124	20 58 42.4	5.56
27	19 56 30.21	2.127	20 58 28.2	5.57	27 21 24.2	19 57 15.62	2.110	20 56 28.9	5.56
28	19 57 21.10	2.113	20 56 14.4	5.57	28 21 21.1	19 58 6.10	2.096	20 54 15.4	5.56
29	19 58 11.66	+2.099	-20 54 0.6	+5.57	29 21 18.0	19 58 56.25	2.082	-20 52 1.9	+5.56

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	19 58 11.66	+2.099	-20 54 0.6	+5.57	1 21 18.0	19 58 56.25	+2.082	-20 52 1.9	+5.56
2	19 59 1.87	2.085	20 51 46.9	5.57	2 21 14.9	19 59 46.05	2.067	20 49 48.5	5.55
3	19 59 51.74	2.070	20 49 33.2	5.56	3 21 11.8	20 0 35.49	2.052	20 47 35.2	5.55
4	20 0 41.25	2.055	20 47 19.6	5.56	4 21 8.7	20 1 24.57	2.037	20 45 22.0	5.54
5	20 1 30.39	2.040	20 45 6.2	5.55	5 21 5.6	20 2 13.28	2.022	20 43 9.0	5.54
6	20 2 19.17	2.025	20 42 53.0	5.55	6 21 2.4	20 3 1.62	2.006	20 40 56.3	5.53
7	20 3 7.57	2.009	20 40 40.0	5.54	7 20 59.3	20 3 49.58	1.990	20 38 43.9	5.52
8	20 3 55.59	1.993	20 38 27.3	5.53	8 20 56.1	20 4 37.16	1.974	20 36 31.8	5.50
9	20 4 43.22	1.977	20 36 14.9	5.52	9 20 53.0	20 5 24.35	1.958	20 34 20.0	5.49
10	20 5 30.45	1.960	20 34 2.8	5.50	10 20 49.8	20 6 11.14	1.941	20 32 8.5	5.47
11	20 6 17.29	1.943	20 31 51.1	5.48	11 20 46.7	20 6 57.52	1.924	20 29 57.5	5 45
12	20 7 3.72	1.926	20 29 39.9	5.46	12 20 43.5	20 7 43.49	1.907	20 27 47.0	5.43
13	20 7 49.74	1.909	20 27 29.2	5.44	13 20 40.3	20 8 29.05	1.890	20 25 37.0	5.41
14	20 8 35.35	1.892	20 25 18.9	5.42	14 20 37.1	20 9 14.20	1.873	20 23 27.5	5.39
15	20 9 20.54	1.874	20 23 9.2	5.40	15 20 33.9	20 9 58.93	1.855	20 21 18.5	5.36
16	20 10 5.31	1.856	20 21 0.1	5.37	16 20 30.7	20 10 43.23	1.837	20 19 10.2	5.33
17	20 10 49.65	1.838	20 18 51.6	5.34	17 20 27.5	20 11 27.10	1.819	20 17 2.6	5.30
18	20 11 33.55	1.820	20 16 43.8	5.31	18 20 24.3	20 12 10.53	1.801	20 14 55.7	5.27
19	20 12 17.01	1.802	20 14 36.7	5.28	19 20 21.1	20 12 53.51	1.782	20 12 49.5	5.24
20	20 13 0.02	1.783	20 12 30.4	5.25	20 20 17.9	20 13 36.04	1.763	20 10 44.1	5.21
21	20 13 42.58	1.764	20 10 24.8	5.22	21 20 14.7	20 14 18.12	1.744	20 8 39.5	5.17
22	20 14 24.68	1.745	20 8 20.0	5.18	22 20 11.4	20 14 59.74	1.724	20 6 35.7	5.13
23	20 15 6.32	1.725	20 6 16.1	5.14	23 20 8.2	20 15 40.89	1.704	20 4 32.9	5.09
24	20 15 47.48	1.705	20 4 13.1	5.10	24 20 5.0	20 16 21.56	1.684	20 2 31.0	5.05
25	20 16 28.17	1.685	20 2 11.1	5.06	25 20 1.7	20 17 1.75	1.664	20 0 30.1	5.01
26	20 17 8.37	1.665	20 0 10.0	5.02	26 19 58.4	20 17 41.45	1.644	19 58 30.2	4.97
27	20 17 48.09	1.644	19 58 10.0	4.98	27 19 55.1	20 18 20.67	1.623	19 56 31.3	4.93
28	20 18 27.31	1.623	19 56 11.1	4.93	28 19 51.8	20 18 59.38	1.602	19 54 33.6	4.88
29	20 19 6.02	1.602	19 54 13.3	4.88	29 19 48.5	20 19 37.58	1.581	19 52 37.0	4.83
30	20 19 44.21	1.581	19 52 16.7	4.83	30 19 45.2	20 20 15.26	1.559	19 50 41.6	4.78
31	20 20 21.88	1.559	19 50 21.3	4.78	31 19 41.9	20 20 52.41	1.537	19 48 47.4	4.73
Apr. 1	20 20 59.02	1.537	19 48 27.1	4.73	1 19 38.6	20 21 29.03	1.515	19 46 54.6	4.67
2	20 21 35.63	1.515	19 46 34.3	4.67	2 19 35.3	20 22 5.12	1.493	19 45 3.2	4.61
3	20 22 11.70	1.492	19 44 42.9	4.61	3 19 31.9	20 22 40.66	1.470	19 43 13.2	4.55
4	20 22 47.23	1.469	19 42 52.9	4.55	4 19 28.6	20 23 15.66	1.447	19 41 24.7	4.49
5	20 23 22.20	1.446	19 41 4.3	4.49	5 19 25.2	20 23 50.10	1.424	19 39 37.6	4.43
6	20 23 56.62	1.422	19 39 17.3	4.43	6 19 21.8	20 24 23.98	1.400	19 37 52.1	4.37
7	20 24 30.47	1.398	19 37 31.9	4.36	7 19 18.4	20 24 57.29	1.377	19 36 8.2	4.30
8	20 25 3.75	1.374	19 35 48.1	4.29	8 19 15.0	20 25 30.03	1.353	19 34 26.0	4.23
9	20 25 36.45	1.350	19 34 5.9	4.22	9 19 11.6	20 26 2.19	1.329	19 32 45.4	4.16
10	20 26 8.57	1.326	19 32 25.4	4.15	10 19 8.2	20 26 33.77	1.305	19 31 6.5	4.09
11	20 26 40.11	1.301	19 30 46.6	4.08	11 19 4.8	20 27 4.76	1.280	19 29 29.3	4.02
12	20 27 11.06	1.276	19 29 9.6	4.01	12 19 1.4	20 27 35.16	1.255	19 27 53.9	3.95
13	20 27 41.41	1.251	19 27 34.4	3.94	13 18 58.0	20 28 4.97	1.230	19 26 20.3	3.87
14	20 28 11.16	1.226	19 26 0.9	3.86	14 18 54.6	20 28 34.17	1.205	19 24 48.6	3.79
15	20 28 40.30	1.201	19 24 29.3	3.78	15 18 51.1	20 29 2.76	1.179	19 23 18.7	3.71
16	20 29 8.83	1.175	19 22 59.6	3.70	16 18 47.7	20 29 30.74	1.153	19 21 50.7	3.63
17	20 29 36.74	1.149	19 21 31.9	3.62	17 18 44.2	20 29 58.10	1.127	19 20 24.7	3.55
18	20 30 4.02	1.123	19 20 6.1	3.54	18 18 40.7	20 30 24.83	1.100	19 19 0.7	3.47
19	20 30 30.68	1.097	19 18 42.3	3.45	19 18 37.2	20 30 50 93	1.074	19 17 38.7	3.38
20	20 30 56.70	1.071	19 17 20.6	3.36	20 18 33.7	20 31 16.39	1.047	19 16 18.8	3.29
21	20 31 22.08	1.044	19 16 1.0	3.27	21 18 30.1	20 31 41.21	1.020	19 15 1.0	3.20
22	20 31 46.82	1.017	19 14 43.5	3.18	22 18 26.6	20 32 5.39	0.993	19 13 45.4	3.11
23	20 32 10.90	0.990	19 13 28.2	3.09	23 18 23.0	20 32 28.91	0.966	19 12 32.0	3.02
24	20 32 34.32	0.962	19 12 15.2	3.00	24 18 19.5	20 32 51.76	0.938	19 11 20.9	2.92
25	20 32 57.07	0.934	19 11 4.4	2.90	25 18 15.9	20 33 13.94	0.910	19 10 12.0	2.82
26	20 33 19.14	0.906	19 9 55.9	2.80	26 18 12.3	20 33 35.44	0.882	19 9 5.5	2.72
27	20 33 40.53	0.877	19 8 49.8	2.70	27 18 8.7	20 33 56.26	0.853	19 8 1.4	2.62
28	20 34 1.24	0.848	19 7 46.1	2.60	28 18 5.1	20 34 16.39	0.824	19 6 59.7	2.52
29	20 34 21.25	0.819	19 6 44.8	2.50	29 18 1.5	20 34 35.83	0.795	19 6 0.4	2.42
30	20 34 40.56	0.790	19 5 45.9	2.40	30 17 57.9	20 34 54.56	0.766	19 5 3.5	2.32
31	20 34 59.17	+0.761	-19 4 49.6	+2.30	31 17 54.3	20 35 12.60	+0.737	-19 4 9.2	+2.21

JUPITER, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	20 34 59.17	+0.761	-19 4 49.6	+2.30	1 17 54.3	20 35 12.60	+0.737	-19 4 9.2	+2.21
2	20 35 17.08	0.731	19 3 55.8	2.19	2 17 50.7	20 35 29.93	0.707	19 3 17.4	2.10
3	20 35 34.27	0.701	19 3 4.6	2.08	3 17 47.0	20 35 46.54	0.677	19 2 28.2	1.99
4	20 35 50.75	0.671	19 2 15.9	1.97	4 17 43.4	20 36 2.45	0.647	19 1 41.6	1.88
5	20 36 6.51	0.641	19 1 29.9	1.86	5 17 39.7	20 36 17.64	0.617	19 0 57.7	1.77
6	20 36 21.54	0.610	19 0 46.5	1.75	6 17 36.0	20 36 32.09	0.587	19 0 16.4	1.66
7	20 36 35.83	0.580	19 0 5.8	1.64	7 17 32.3	20 36 45.81	0.557	18 59 37.8	1.55
8	20 36 49.39	0.550	18 59 27.8	1.53	8 17 28.6	20 36 58.80	0.526	18 59 1.8	1.44
9	20 37 2.21	0.519	18 58 52.5	1.42	9 17 24.8	20 37 11.05	0.495	18 58 28.6	1.33
10	20 37 14.28	0.488	18 58 20.0	1.30	10 17 21.0	20 37 22.55	0.464	18 57 58.2	1.21
11	20 37 25.61	0.457	18 57 50.2	1.19	11 17 17.3	20 37 33.31	0.433	18 57 30.4	1.10
12	20 37 36.19	0.426	18 57 23.2	1.07	12 17 13.5	20 37 43.32	0.402	18 57 5.5	0.98
13	20 37 46.02	0.395	18 56 59.0	0.96	13 17 9.7	20 37 52.59	0.371	18 56 43.4	0.87
14	20 37 55.10	0.363	18 56 37.6	0.84	14 17 5.9	20 38 1.11	0.340	18 56 24.0	0.75
15	20 38 3.43	0.331	18 56 19.0	0.72	15 17 2.1	20 38 8.86	0.308	18 56 7.5	0.63
16	20 38 11.01	0.300	18 56 3.2	0.60	16 16 58.3	20 38 15.91	0.277	18 55 53.8	0.51
17	20 38 17.83	0.268	18 55 50.3	0.48	17 16 54.5	20 38 22.17	0.245	18 55 42.9	0.39
18	20 38 23.88	0.236	18 55 40.2	0.36	18 16 50.7	20 38 27.67	0.213	18 55 34.8	0.27
19	20 38 29.16	0.204	18 55 33.0	0.24	19 16 46.9	20 38 32.40	0.181	18 55 29.7	0.15
20	20 38 33.68	0.172	18 55 28.7	+0.12	20 16 43.0	20 38 36.37	0.149	18 55 27.5	+0.03
21	20 38 37.43	0.140	18 55 27.4	-0.00	21 16 39.1	20 38 39.57	0.117	18 55 28.2	-0.09
22	20 38 40.40	0.108	18 55 28.9	0.12	22 16 35.2	20 38 42.00	0.085	18 55 31.7	0.21
23	20 38 42.59	0.076	18 55 33.3	0.25	23 16 31.3	20 38 43.65	0.053	18 55 38.1	0.34
24	20 38 44.00	0.043	18 55 40.7	0.37	24 16 27.4	20 38 44.52	+0.021	18 55 47.5	0.46
25	20 38 44.63	+0.010	18 55 51.1	0.50	25 16 23.5	20 38 44.61	-0.012	18 55 59.9	0.58
26	20 38 44.48	-0.023	18 56 4.5	0.62	26 16 19.6	20 38 43.93	0.045	18 56 15.3	0.70
27	20 38 43.54	0.056	18 56 20.8	0.75	27 16 15.6	20 38 42.47	0.078	18 56 33.6	0.82
28	20 38 41.82	0.089	18 56 40.1	0.87	28 16 11.6	20 38 40.22	0.111	18 56 54.8	0.95
29	20 38 39.31	0.122	18 57 2.4	0.99	29 16 7.6	20 38 37.19	0.143	18 57 19.0	1.07
30	20 38 36.02	0.154	18 57 27.6	1.11	30 16 3.6	20 38 33.39	0.175	18 57 46.1	1.19
31	20 38 31.95	0.187	18 57 55.7	1.23	31 15 59.6	20 38 28.81	0.207	18 58 16.1	1.31
June 1	20 38 27.11	0.219	18 58 26.8	1.35	1 15 55.6	20 38 23.47	0.239	18 58 49.0	1.43
2	20 38 21.49	0.251	18 59 0.7	1.47	2 15 51.6	20 38 17.35	0.271	18 59 24.7	1.55
3	20 38 15.09	0.283	18 59 37.5	1.59	3 15 47.6	20 38 10.46	0.303	19 0 3.3	1.67
4	20 38 7.92	0.315	19 0 17.1	1.71	4 15 43.5	20 38 2.81	0.335	19 0 44.6	1.78
5	20 37 59.98	0.347	19 0 59.5	1.83	5 15 39.5	20 37 54.40	0.366	19 1 28.7	1.90
6	20 37 51.29	0.379	19 1 44.7	1.95	6 15 35.4	20 37 45.24	0.397	19 2 15.6	2.02
7	20 37 41.84	0.410	19 2 32.7	2.06	7 15 31.3	20 37 35.33	0.428	19 3 5.2	2.13
8	20 37 31.63	0.441	19 3 23.4	2.17	8 15 27.2	20 37 24.67	0.459	19 3 57.5	2.24
9	20 37 20.67	0.472	19 4 16.9	2.28	9 15 23.1	20 37 13.27	0.490	19 4 52.6	2.35
10	20 37 8.98	0.503	19 5 13.0	2.39	10 15 18.9	20 37 1.14	0.520	19 5 50.2	2.46
11	20 36 56.55	0.533	19 6 11.8	2.50	11 15 14.8	20 36 48.28	0.550	19 6 50.5	2.57
12	20 36 43.39	0.563	19 7 13.2	2.61	12 15 10.6	20 36 34.70	0.580	19 7 53.3	2.68
13	20 36 29.51	0.593	19 8 17.1	2.72	13 15 6.4	20 36 20.41	0.610	19 8 58.6	2.78
14	20 36 14.92	0.623	19 9 23.6	2.82	14 15 2.2	20 36 5.42	0.639	19 10 6.5	2.88
15	20 35 59.62	0.652	19 10 32.6	2.92	15 14 58.0	20 35 49.73	0.668	19 11 16.8	2.98
16	20 35 43.62	0.681	19 11 44.0	3.02	16 14 53.8	20 35 33.35	0.697	19 12 29.5	3.07
17	20 35 26.93	0.710	19 12 57.7	3.12	17 14 49.6	20 35 16.28	0.725	19 13 44.5	3.17
18	20 35 9.56	0.738	19 14 13.9	3.22	18 14 45.4	20 34 58.54	0.753	19 15 1.9	3.27
19	20 34 51.50	0.766	19 15 32.4	3.32	19 14 41.2	20 34 40.12	0.781	19 16 21.5	3.36
20	20 34 32.77	0.794	19 16 53.1	3.41	20 14 36.9	20 34 21.04	0.808	19 17 43.3	3.45
21	20 34 13.38	0.821	19 18 16.0	3.50	21 14 32.6	20 34 1.32	0.835	19 19 7.3	3.54
22	20 33 53.34	0.848	19 19 41.0	3.59	22 14 28.3	20 33 40.95	0.861	19 20 33.3	3.63
23	20 33 32.66	0.875	19 21 8.1	3.68	23 14 24.0	20 33 19.95	0.887	19 22 1.4	3.71
24	20 33 11.35	0.901	19 22 37.2	3.76	24 14 19.7	20 32 58.33	0.913	19 23 31.4	3.79
25	20 32 49.43	0.926	19 24 8.4	3.84	25 14 15.4	20 32 36.12	0.938	19 25 3.5	3.87
26	20 32 26.91	0.951	19 25 41.5	3.92	26 14 11.1	20 32 13.32	0.962	19 26 37.4	3.95
27	20 32 3.80	0.975	19 27 16.4	3.99	27 14 6.8	20 31 49.94	0.986	19 28 13.1	4.02
28	20 31 40.11	0.999	19 28 53.1	4.07	28 14 2.5	20 31 25.99	1.009	19 29 50.5	4.09
29	20 31 15.86	1·022	19 30 31.5	4.14	29 13 58.2	20 31 1.49	1.032	19 31 29.5	4.16
30	20 30 51.06	1.044	19 32 11.6	4.20	30 13 53.8	20 30 36.64	1.054	19 33 10.2	4.22
31	20 30 25.74	-1.066	-19 33 53.2	-4.26	31 13 49.5	20 30 10.92	-1.075	-19 34 52.4	-4.28

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	20 30 25.74	-1.066	-19 33 53.2	- 4.26	1 13 49.5	20 30 10.92	-1.075	-19 34 52.4	- 4.28
2	20 29 59.91	1.087	19 35 36.3	4.32	2 13 45.1	20 29 44.88	1.095	19 36 36.0	4.34
3	20 29 33.59	1.107	19 37 20.7	4.38	3 13 40.7	20 29 18.37	1.114	19 38 20.8	4.39
4	20 29 6.80	1.126	19 39 6.4	4.43	4 13 36.3	20 28 51.41	1.133	19 40 6.9	4.44
5	20 28 39.55	1.144	19 40 53.3	4.48	5 13 31.9	20 28 23.99	1.151	19 41 54.1	4.49
6	20 28 11.86	1.162	19 42 41.4	4.52	6 13 27.5	20 27 56.15	1.168	19 43 42.5	4.53
7	20 27 43.75	1.179	19 44 30.5	4.56	7 13 23.1	20 27 27.90	1.185	19 45 31.8	4.57
8	20 27 15.24	1.195	19 46 20.5	4.60	8 13 18.7	20 26 59.26	1.201	19 47 21.9	4.61
9	20 26 46.35	1.211	19 48 11.4	4.64	9 13 14.3	20 26 30.26	1.216	19 49 12.8	4.64
10	20 26 17.10	1.226	19 50 3.1	4.67	10 13 9.9	20 26 0.91	1.230	19 51 4.5	4.67
11	20 25 47.50	1.240	19 51 55.4	4.70	11 13 5.5	20 25 31.22	1.243	19 52 56.9	4.69
12	20 25 17.58	1.253	19 53 48.3	4.72	12 13 1.1	20 25 1.22	1.255	19 54 49.8	4.71
13	20 24 47.36	1.265	19 55 41.8	4.74	13 12 56.7	20 24 30.94	1.267	19 56 43.2	4.73
14	20 24 16.86	1.276	19 57 35.8	4.76	14 12 52.2	20 24 0.39	1.278	19 58 37.1	4.75
15	20 23 46.09	1.286	19 59 30.1	4.77	15 12 47.8	20 23 29.59	1.288	20 0 31.2	4.76
16	20 23 15.09	1.296	20 1 24.7	4.78	16 12 43.3	20 22 58.57	1.297	20 2 25.6	4.77
17	20 22 43.87	1.305	20 3 19.5	4.79	17 12 38.8	20 22 27.34	1.305	20 4 20.1	4.78
18	20 22 12.45	1.313	20 5 14.5	4.80	18 12 34.4	20 21 55.92	1.312	20 6 14.8	4.78
19	20 21 40.85	1.320	20 7 9.6	4.80	19 12 29.9	20 21 24.33	1.318	20 8 9.5	4.78
20	20 21 9.10	1.326	20 9 4.7	4.80	20 12 25.4	20 20 52.61	1.323	20 10 4.2	4.78
21	20 20 37.22	1.331	20 10 59.7	4.79	21 12 21.0	20 20 20.77	1.327	20 11 58.7	4.77
22	20 20 5.23	1.335	20 12 54.5	4.78	22 12 16.5	20 19 48.83	1.331	20 13 53.0	4.76
23	20 19 33.15	1.338	20 14 49.0	4.77	23 12 12.0	20 19 16.81	1.334	20 15 47.0	4.74
24	20 19 1.01	1.340	20 16 43.1	4.75	24 12 7.6	20 18 44.75	1.336	20 17 40.6	4.72
25	20 18 28.83	1.341	20 18 36.8	4.73	25 12 3.1	20 18 12.66	1.337	20 19 33.7	4.70
26	20 17 56.63	1.341	20 20 30.0	4.70	26 11 58.7	20 17 40.57	1.337	20 21 26.3	4.67
27	20 17 24.44	1.341	20 22 22.6	4.67	27 11 54.2	20 17 8.49	1.336	20 23 18.2	4.64
28	20 16 52.28	1.339	20 24 14.5	4.64	28 11 49.8	20 16 36.45	1.334	20 25 9.4	4.61
29	20 16 20.18	1.336	20 26 5.7	4.61	29 11 45.3	20 16 4.48	1.330	20 26 59.8	4.58
30	20 15 48.16	1.332	20 27 56.0	4.57	30 11 40.9	20 15 32.61	1.325	20 28 49.3	4.54
31	20 15 16.24	1.327	20 29 45.4	4.53	31 11 36.4	20 15 0.85	1.319	20 30 37.9	4.50
Aug. 1	20 14 44.46	1.321	20 31 33.8	4.49	1 11 32.0	20 14 29.24	1.313	20 32 25.5	4.46
2	20 14 12.84	1.314	20 33 21.1	4.45	2 11 27.5	20 13 57.80	1.306	20 34 11.9	4.41
3	20 13 41.40	1.306	20 35 7.3	4.40	3 11 23.0	20 13 26.55	1.298	20 35 57.2	4.36
4	20 13 10.16	1.297	20 36 52.2	4.35	4 11 18.6	20 12 55.51	1.288	20 37 41.2	4.31
5	20 12 39.14	1.287	20 38 35.9	4.29	5 11 14.2	20 12 24.70	1.277	20 39 23.9	4.25
6	20 12 8.37	1.276	20 40 18.2	4.23	6 11 9.7	20 11 54.15	1.266	20 41 5.3	4.19
7	20 11 37.88	1.264	20 41 59.1	4.17	7 11 5.3	20 11 23.89	1.254	20 42 45.2	4.13
8	20 11 7.68	1.251	20 43 38.6	4.11	8 11 0.9	20 10 53.92	1.241	20 44 23.7	4.07
9	20 10 37.79	1.238	20 45 16.5	4.05	9 10 56.5	20 10 24.27	1.228	20 46 0.6	4.00
10	20 10 8.24	1.224	20 46 52.9	3.98	10 10 52.0	20 9 54.97	1.213	20 47 36.0	3.94
11	20 9 39.04	1.209	20 48 27.6	3.91	11 10 47.6	20 9 26.03	1.198	20 49 9.7	3.87
12	20 9 10.22	1.193	20 50 0.7	3.84	12 10 43.2	20 8 57.47	1·182	20 50 41.8	3.80
13	20 8 41.79	1.176	20 51 32.1	3.77	13 10 38.8	20 8 29.31	1.165	20 52 12.2	3.73
14	20 8 13.77	1.158	20 53 1.8	3.70	14 10 34.4	20 8 1.57	1.147	20 53 40.8	3.66
15	20 7 46.18	1.140	20 54 29.7	3.63	15 10 30.0	20 7 34.26	1.128	20 55 7.6	3.58
16	20 7 19.05	1.121	20 55 55.7	3.55	16 10 25.6	20 7 7.41	1.109	20 56 32.5	3.50
17	20 6 52.39	1.101	20 57 19.9	3.47	17 10 21.2	20 6 41.04	1.089	20 57 55.6	3.42
18	20 6 26.21	1.080	20 58 42.2	3.39	18 10 16.8	20 6 15.15	1.068	20 59 16.8	3.34
19	20 6 0.54	1.059	21 0 2.6	3.31	19 10 12.4	20 5 49.78	1.046	21 0 36.1	3.26
20	20 5 35.39	1.037	21 1 21.0	3.23	20 10 8.1	20 5 24.94	1.024	21 1 53.4	3.18
21	20 5 10.79	1.014	21 2 37.3	3.14	21 10 3.8	20 5 0.64	1.001	21 3 8.7	3.10
22	20 4 46.74	0.990	21 3 51.6	3.06	22 9 59.5	20 4 36.90	0.977	21 4 21.9	3.01
23	20 4 23.26	0.966	21 5 3.9	2.97	23 9 55.2	20 4 13.73	0.953	21 5 33.1	2.92
24	20 4 0.37	0.941	21 6 14.0	2.88	24 9 50.9	20 3 51.15	0.928	21 6 42.2	2.83
25	20 3 38.09	0.915	21 7 22.0	2.79	25 9 46.6	20 3 29.19	0.902	21 7 49.1	2.74
26	20 3 16.44	0.889	21 8 27.8	2.70	26 9 42.3	20 3 7.86	0.875	21 8 53.8	2.65
27	20 2 55.43	0.862	21 9 31.4	2.61	27 9 38.0	20 2 47.17	0.848	21 9 56.4	2.56
28	20 2 35.08	0.834	21 10 32.8	2.51	28 9 33.7	20 2 27.15	0.820	21 10 56.7	2.47
29	20 2 15.40	0.806	21 11 32.0	2.42	29 9 29.5	20 2 7.80	0.792	21 11 54.8	2.38
30	20 1 56.40	0.777	21 12 28.9	2.33	30 9 25.2	20 1 49.12	0.763	21 12 50.6	2.29
31	20 1 38.09	-0.748	-21 13 23.5	- 2.23	31 9 21.0	20 1 31.14	-0.734	-21 13 44.1	- 2.19

JUPITER, 1878.

Date. 1878.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	20 1 20.49	-0.718	-21 14 15.7	- 2.13	1 9 16.8	20 1 13.87	-0.705	-21 14 35.2	- 2.09
2	20 1 3.61	0.688	21 15 5.6	2.03	2 9 12.6	20 0 57.32	0.675	21 15 24.1	1.99
3	20 0 47.45	0.658	21 15 53.2	1.94	3 9 8.4	20 0 41.49	0.644	21 16 10.7	1.90
4	20 0 32.03	0.627	21 16 38.5	1.84	4 9 4.2	20 0 26.40	0.613	21 16 55.0	1.80
5	20 0 17.36	0.596	21 17 21.4	1.74	5 9 0.0	20 0 12.05	0.582	21 17 36.9	1.70
6	20 0 3.44	0.564	21 18 1.9	1.64	6 8 55.9	19 59 58.45	0.551	21 18 16.4	1.60
7	19 59 50.28	0.532	21 18 40.1	1.54	7 8 51.7	19 59 45.61	0.519	21 18 53.6	1.50
8	19 59 37.89	0.500	21 19 15.9	1.45	8 8 47.6	19 59 33.54	0.487	21 19 28.5	1.40
9	19 59 26.28	0.468	21 19 49.3	1.35	9 8 43.5	19 59 22.25	0.455	21 20 0.9	1.31
10	19 59 15.45	0.435	21 20 20.4	1.25	10 8 39.4	19 59 11.73	0.422	21 20 31.0	1.21
11	19 59 5.40	0.402	21 20 49.1	1.15	11 8 35.3	19 59 1.99	0.389	21 20 58.8	1.11
12	19 58 56.14	0.369	21 21 15.5	1.05	12 8 31.2	19 58 53.04	0.356	21 21 24.3	1.01
13	19 58 47.67	0.336	21 21 39.5	0.96	13 8 27.1	19 58 44.88	0.323	21 21 47.4	0.91
14	19 58 40.00	0.303	21 22 1.2	0.86	14 8 23.1	19 58 37.51	0.290	21 22 8.2	0.82
15	19 58 33.13	0.270	21 22 20.5	0.76	15 8 19.0	19 58 30.94	0.257	21 22 26.6	0.72
16	19 58 27.07	0.236	21 22 37.4	0.66	16 8 15.0	19 58 25.17	0.223	21 22 42.6	0.62
17	19 58 21.82	0.202	21 22 52.0	0.56	17 8 11.0	19 58 20.21	0.189	21 22 56.4	0.52
18	19 58 17.38	0.168	21 23 4.2	0.46	18 8 7.0	19 58 16.06	0.155	21 23 7.8	0.42
19	19 58 13.76	0.134	21 23 14.0	0.36	19 8 3.0	19 58 12.72	0.121	21 23 16.7	0.33
20	19 58 10.96	0.100	21 23 21.4	0.26	20 7 59.0	19 58 10.20	0.087	21 23 23.3	0.23
21	19 58 8.99	0.065	21 23 26.4	0.16	21 7 55.1	19 58 8.51	0.053	21 23 27.5	0.13
22	19 58 7.85	-0.030	21 23 29.0	- 0.06	22 7 51.1	19 58 7.65	-0.019	21 23 29.4	- 0.03
23	19 58 7.53	+0.005	21 23 29.4	+ 0.04	23 7 47.1	19 58 7.61	+0.015	21 23 28.9	+ 0.07
24	19 58 8.04	0.040	21 23 27.3	0.14	24 7 43.2	19 58 8.38	0.050	21 23 26.0	0.17
25	19 58 9.37	0.074	21 23 22.7	0.24	25 7 39.3	19 58 9.97	0.084	21 23 20.7	0.27
26	19 58 11.53	0.108	21 23 15.8	0.34	26 7 35.4	19 58 12.39	0.118	21 23 13.1	0.37
27	19 58 14.52	0.142	21 23 6.5	0.44	27 7 31.5	19 58 15.63	0.152	21 23 3.1	0.47
28	19 58 18.34	0.176	21 22 54.8	0.54	28 7 27.6	19 58 19.70	0.187	21 22 50.7	0.57
29	19 58 22.99	0.210	21 22 40.7	0.64	29 7 23.8	19 58 24.59	0.221	21 22 35.9	0.67
30	19 58 28.47	0.245	21 22 24.3	0.74	30 7 20.0	19 58 30.31	0.255	21 22 18.8	0.77
Oct. 1	19 58 34.77	0.279	21 22 5.5	0.83	1 7 16.2	19 58 36.84	0.289	21 21 59.3	0.87
2	19 58 41.88	0.313	21 21 44.3	0.93	2 7 12.4	19 58 44.18	0.323	21 21 37.4	0.96
3	19 58 49.81	0.347	21 21 20.7	1.03	3 7 8.6	19 58 52.33	0.357	21 21 13.2	1.06
4	19 58 58.58	0.381	21 20 54.8	1.13	4 7 4.8	19 59 1.30	0.391	21 20 46.7	1.16
5	19 59 8.14	0.415	21 20 26.6	1.23	5 7 1.0	19 59 11.08	0.424	21 20 17.9	1.25
6	19 59 18.50	0.448	21 19 56.0	1.33	6 6 57.3	19 59 21.65	0.457	21 19 46.7	1.35
7	19 59 29.66	0.481	21 19 23.1	1.42	7 6 53.6	19 59 33.01	0.490	21 19 13.2	1.44
8	19 59 41.61	0.514	21 18 47.9	1.52	8 6 49.9	19 59 45.16	0.523	21 18 37.4	1.54
9	19 59 54.35	0.547	21 18 10.4	1.62	9 6 46.2	19 59 58.09	0.555	21 17 59.3	1.63
10	20 0 7.87	0.580	21 17 30.5	1.71	10 6 42.5	20 0 11.79	0.587	21 17 18.9	1.73
11	20 0 22.17	0.612	21 16 48.3	1.81	11 6 38.8	20 0 26.27	0.619	21 16 36.2	1.83
12	20 0 37.24	0.644	21 16 3.8	1.90	12 6 35.1	20 0 41.51	0.651	21 15 51.2	1.92
13	20 0 53.08	0.676	21 15 17.0	2.00	13 6 31.4	20 0 57.52	0.683	21 15 3.9	2.02
14	20 1 9.68	0.708	21 14 28.0	2.10	14 6 27.7	20 1 14.28	0.714	21 14 14.4	2.11
15	20 1 27.04	0.739	21 13 36.7	2.19	15 6 24.1	20 1 31.80	0.745	21 13 22.7	2.21
16	20 1 45.15	0.770	21 12 43.1	2.29	16 6 20.5	20 1 50.06	0.776	21 12 28.6	2.30
17	20 2 4.01	0.801	21 11 47.2	2.38	17 6 16.9	20 2 9.07	0.807	21 11 32.2	2.40
18	20 2 23.61	0.832	21 10 49.0	2.48	18 6 13 3	20 2 28.81	0.838	21 10 33.5	2.49
19	20 2 43.95	0.863	21 9 48.5	2.57	19 6 9.7	20 2 49.29	0.868	21 9 32.6	2.59
20	20 3 5.02	0.893	21 8 45.7	2.67	20 6 6.1	20 3 10.49	0.898	21 8 29.4	2.68
21	20 3 26.82	0.923	21 7 40.6	2.76	21 6 2.5	20 3 32.41	0.928	21 7 23.9	2.78
22	20 3 49.33	0.953	21 6 33.2	2.85	22 5 58.9	20 3 55.05	0.958	21 6 16.1	2.87
23	20 4 12.56	0.983	21 5 23.6	2.95	23 5 55.4	20 4 18.40	0.987	21 5 6.1	2.97
24	20 4 36.50	1.012	21 4 11.7	3.04	24 5 51.9	20 4 42.46	1.016	21 3 53.8	3.06
25	20 5 1 14	1.041	21 2 57.5	3.14	25 5 48.4	20 5 7.21	1.045	21 2 39.2	3.16
26	20 5 26.48	1.070	21 1 41.0	3.23	26 5 44.9	20 5 32.65	1.074	21 1 22.3	3.25
27	20 5 52.50	1.098	21 0 22.1	3.33	27 5 41.4	20 5 58.77	1.102	21 0 3.1	3.35
28	20 6 19.20	1.126	20 59 1.0	3.43	28 5 37.9	20 6 25.56	1.130	20 58 41.6	3.44
29	20 6 46.57	1.154	20 57 37.6	3.52	29 5 34.4	20 6 53.02	1.157	20 57 17.9	3.54
30	20 7 14.61	1.181	20 56 11.9	3.62	30 5 30.9	20 7 21.14	1.184	20 55 51.9	3.63
31	20 7 43.30	+1.208	-20 54 44.0	+ 3.71	31 5 27.4	20 7 49.91	+1.211	-20 54 23.7	+ 3.73

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	20 8 12.64	+1.235	-20 53 13.8	+ 3.81	1 5 24.0	20 8 19.33	+1.238	-20 52 53.2	+ 3.82
2	20 8 42.61	1.261	20 51 41.3	3.91	2 5 20.5	20 8 49.37	1.264	20 51 20.4	3.92
3	20 9 13.21	1.287	20 50 6.6	4.00	3 5 17.1	20 9 20.03	1.290	20 49 45.4	4.01
4	20 9 44.44	1.313	20 48 29.7	4.09	4 5 13.7	20 9 51.32	1.316	20 48 8.3	4.10
5	20 10 16.28	1.339	20 46 50.6	4.18	5 5 10.3	20 10 23.22	1.341	20 46 29.0	4.19
6	20 10 48.73	1.364	20 45 9.3	4.27	6 5 6.9	20 10 55.72	1.366	20 44 47.4	4.28
7	20 11 21.77	1.389	20 43 25.7	4.37	7 5 3.5	20 11 28.81	1.391	20 43 3.6	4.38
8	20 11 55.40	1.413	20 41 39.9	4.46	8 5 0.1	20 12 2.48	1.415	20 41 17.6	4.47
9	20 12 29.61	1.437	20 39 51.9	4.55	9 4 56.8	20 12 36.73	1.439	20 39 29.4	4.56
10	20 13 4.39	1.461	20 38 1.7	4.64	10 4 53.4	20 13 11.55	1.463	20 37 39.0	4.65
11	20 13 39.73	1.484	20 36 9.3	4.73	11 4 50.1	20 13 46.92	1.486	20 35 46.4	4.74
12	20 14 15.63	1.507	20 34 14.6	4.83	12 4 46.8	20 14 22.85	1.509	20 33 51.5	4.83
13	20 14 52.08	1.530	20 32 17.8	4.92	13 4 43.5	20 14 59.32	1.531	20 31 54.5	4.92
14	20 15 29.07	1.552	20 30 18.8	5.01	14 4 40.2	20 15 36.33	1.553	20 29 55.3	5.01
15	20 16 6.60	1.574	20 28 17.6	5.10	15 4 36.9	20 16 13.88	1.575	20 27 53.9	5.10
16	20 16 44.65	1.596	20 26 14.1	5.19	16 4 33.6	20 16 51.95	1.597	20 25 50.3	5.19
17	20 17 23.23	1.618	20 24 8.5	5.29	17 4 30.3	20 17 30.53	1.618	20 23 44.6	5.29
18	20 18 2.32	1.639	20 22 0.7	5.38	18 4 27.0	20 18 9.62	1.639	20 21 36.7	5.38
19	20 18 41.92	1.660	20 19 50.7	5.47	19 4 23.7	20 18 49.22	1.660	20 19 26.6	5.47
20	20 19 22.02	1.681	20 17 38.4	5.56	20 4 20.4	20 19 29.32	1.681	20 17 14.2	5.56
21	20 20 2.61	1.701	20 15 23.9	5.65	21 4 17.2	20 20 9.91	1.701	20 14 59.6	5.65
22	20 20 43.69	1.721	20 13 7.2	5.74	22 4 13.9	20 20 50.98	1.721	20 12 42.9	5.74
23	20 21 25.24	1.741	20 10 48.4	5.83	23 4 10.7	20 21 32.52	1.740	20 10 24.0	5.83
24	20 22 7.26	1.760	20 8 27.4	5.92	24 4 7.5	20 22 14.53	1.759	20 8 2.9	5.92
25	20 22 49.74	1.779	20 6 4.2	6.01	25 4 4.3	20 22 56.99	1.778	20 5 39.7	6.01
26	20 23 32.67	1.798	20 3 38.8	6.10	26 4 1.1	20 23 39.90	1.797	20 3 14.3	6.10
27	20 24 16.05	1.816	20 1 11.3	6.19	27 3 57.9	20 24 23.26	1.815	20 0 46.7	6.19
28	20 24 59.86	1.834	19 58 41.6	6.28	28 3 54.7	20 25 7.04	1.833	19 58 17.0	6.28
29	20 25 44.09	1.852	19 56 9.8	6.37	29 3 51.5	20 25 51.24	1.850	19 55 45.2	6.37
30	20 26 28.74	1.869	19 53 35.8	6.46	30 3 48.3	20 26 35.86	1.867	19 53 11.2	6.46
Dec. 1	20 27 13.80	1.886	19 50 59.7	6.55	1 3 45.1	20 27 20.88	1.884	19 50 35.1	6.55
2	20 27 59.25	1.902	19 48 21.5	6.64	2 3 41.9	20 28 6.29	1.900	19 47 57.0	6.64
3	20 28 45.10	1.918	19 45 41.3	6.73	3 3 38.8	20 28 52.10	1.916	19 45 16.8	6.73
4	20 29 31.33	1.934	19 42 59.0	6.82	4 3 35.6	20 29 38.28	1.932	19 42 34.5	6.82
5	20 30 17.94	1.950	19 40 14.6	6.90	5 3 32.5	20 30 24.84	1.948	19 39 50.2	6.90
6	20 31 4.92	1.965	19 37 28.2	6.98	6 3 29.3	20 31 11.77	1.963	19 37 3.8	6.98
7	20 31 52.25	1.980	19 34 39.7	7.07	7 3 26.1	20 31 59.05	1.978	19 34 15.4	7.07
8	20 32 39.94	1.995	19 31 49.2	7.16	8 3 23.0	20 32 46.69	1.992	19 31 25.0	7.16
9	20 33 27.97	2.009	19 28 56.6	7.24	9 3 19.8	20 33 34.66	2.006	19 28 32.5	7.24
10	20 34 16.34	2.023	19 26 2.0	7.32	10 3 16.6	20 34 22.97	2.020	19 25 38.0	7.32
11	20 35 5.04	2.037	19 23 5.4	7.40	11 3 13.5	20 35 11.61	2.034	19 22 41.5	7.40
12	20 35 54.07	2.050	19 20 6.8	7.49	12 3 10.3	20 36 0.58	2.047	19 19 43.0	7.49
13	20 36 43.42	2.063	19 17 6.2	7.58	13 3 7.2	20 36 49.86	2.060	19 16 42.5	7.57
14	30 37 33.08	2.076	19 14 3.5	7.66	14 3 4.1	20 37 39.45	2.073	19 13 40.0	7.65
15	20 38 23.04	2.089	19 10 58.8	7.74	15 3 1.0	20 38 29.34	2.086	19 10 35.5	7.73
16	20 39 13.31	2.101	19 7 52.2	7.82	16 2 57.9	20 39 19.54	2.098	19 7 29.0	7.81
17	20 40 3.87	2.113	19 4 43.6	7.90	17 2 54.8	20 40 10.03	2.110	19 4 20.6	7.89
18	20 40 54.71	2.125	19 1 33.0	7.98	18 2 51.7	20 41 0.80	2.122	19 1 10.1	7.97
19	20 41 45.83	2.136	18 58 20.4	8.06	19 2 48.7	20 41 51.84	2.133	18 57 57.7	8.05
20	20 42 37.22	2.147	18 55 5.9	8.14	20 2 45.6	20 42 43.15	2.144	18 54 43.4	8.13
21	20 43 28.88	2.158	18 51 49.5	8.22	21 2 42.5	20 43 34.73	2.155	18 51 27.2	8.21
22	20 44 20.79	2.169	18 48 31.1	8.30	22 2 39.4	20 44 26.56	2.165	18 48 9.0	8.29
23	20 45 12.96	2.179	18 45 10.9	8.38	23 2 36.4	20 45 18.64	2.175	18 44 49.0	8.37
24	20 46 5.37	2.189	18 41 48.8	8.46	24 2 33.3	20 46 10.97	2.185	18 41 27.1	8.45
25	20 46 58.02	2.199	18 38 24.8	8.54	25 2 30.3	20 47 3.53	2.195	18 38 3.3	8.53
26	20 47 50.90	2.208	18 34 59.0	8.61	26 2 27.2	20 47 56.32	2.204	18 34 37.8	8.60
27	20 48 43.99	2.217	18 31 31.3	8.69	27 2 24.2	20 48 49.32	2.213	18 31 10.4	8.68
28	20 49 37.30	2.226	18 28 1.8	8.77	28 2 21.1	20 49 42.54	2.222	18 27 41.2	8.76
29	20 50 30.81	2.234	18 24 30.6	8.85	29 2 18.1	20 50 35.96	2.230	18 24 10.2	8.83
30	20 51 24.52	2.242	18 20 57.6	8.92	30 2 15.0	20 51 29.57	2.238	18 20 37.5	8.90
31	20 52 18.42	2.250	18 17 22.8	8.99	31 2 12.0	20 52 23.37	2.246	18 17 3.0	8.97
32	20 53 12.51	+2.258	-18 13 46.3	+ 9.06	32 2 9.4	20 53 17.36	+2.254	-18 13 26.8	+ 9.04

Date. 1878.	FOR WASHINGTON MEAN NOON. Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	FOR MERIDIAN TRANSIT. Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 1	23 9 28.27	+0.688	-7 37 23.6	+ 4.70	1 4 23.9	23 9 31.30	+0.688	-7 37 2.9	+ 4.70
2	23 9 44.91	0.700	7 35 30.0	4.77	2 4 20.3	23 9 47.96	0.700	7 35 9.3	4.77
3	23 10 1.86	0.713	7 33 34.5	4.85	3 4 16.6	23 10 4.92	0.713	7 33 13.8	4.85
4	23 10 19.11	0.725	7 31 37.2	4.92	4 4 13.0	23 10 22.17	0.725	7 31 16.5	4.92
5	23 10 36.65	0.737	7 29 38.2	4.99	5 4 9.3	23 10 39.72	0.737	7 29 17.5	4.99
6	23 10 54.48	0.748	7 27 37.5	5.06	6 4 5.7	23 10 57.55	0.749	7 27 16.8	5.06
7	23 11 12.60	0.760	7 25 35.1	5.14	7 4 2.1	23 11 15.68	0.761	7 25 14.4	5.14
8	23 11 31.00	0.772	7 23 31.0	5.21	8 3 58.5	23 11 34.07	0.772	7 23 10.3	5.21
9	23 11 49.67	0.784	7 21 25.2	5.28	9 3 54.8	23 11 52.74	0.783	7 21 4.5	5.27
10	23 12 8.61	0.795	7 19 17.8	5.34	10 3 51.2	23 12 11.67	0.795	7 18 57.2	5.34
11	23 12 27.82	0.806	7 17 8.8	5.41	11 3 47.6	23 12 30.88	0.806	7 16 48.2	5.40
12	23 12 47.29	0.816	7 14 58.3	5.47	12 3 44.0	23 12 50.34	0.816	7 14 37.8	5.47
13	23 13 7.01	0.827	7 12 46.2	5.54	13 3 40.4	23 13 10.05	0.827	7 12 25.8	5.53
14	23 13 26.99	0.837	7 10 32.6	5.60	14 3 36.8	23 13 30.02	0.837	7 10 12.3	5.59
15	23 13 47.21	0.848	7 8 17.6	5.66	15 3 33.2	23 13 50.23	0.847	7 7 57.4	5.65
16	23 14 7.68	0.858	7 6 1.2	5.71	16 3 29.6	23 14 10.68	0.857	7 5 41.2	5.71
17	23 14 28.39	0.868	7 3 43.3	5.77	17 3 26.0	23 14 31.37	0.867	7 3 23.5	5.77
18	23 14 49.34	0.878	7 1 24.0	5.83	18 3 22.4	23 14 52.31	0.877	7 1 4.3	5.82
19	23 15 10.52	0.888	6 59 3.4	5.89	19 3 18.9	23 15 13.47	0.886	6 58 43.9	5.88
20	23 15 31.93	0.897	6 56 41.4	5.95	20 3 15.3	23 15 34.86	0.896	6 56 22.0	5.94
21	23 15 53.56	0.906	6 54 18.0	6.00	21 3 11.7	23 15 56.46	0.905	6 53 58.8	5.99
22	23 16 15.41	0.915	6 51 52.3	6.05	22 3 8.1	23 16 18.28	0.914	6 51 34.3	6.05
23	23 16 37.48	0.924	6 49 27.4	6.11	23 3 4.6	23 16 40.32	0.923	6 49 8.6	6.10
24	23 16 59.76	0.932	6 47 0.2	6.16	24 3 1.0	23 17 2.57	0.931	6 46 41.6	6.15
25	23 17 22.24	0.941	6 44 31.8	6.21	25 2 57.4	23 17 25.02	0.940	6 44 13.4	6.20
26	23 17 44.93	0.950	6 42 2.2	6.26	26 2 53.9	23 17 47.68	0.949	6 41 44.0	6.25
27	23 18 7.83	0.958	6 39 31.4	6.31	27 2 50.3	23 18 10.55	0.957	6 39 13.4	6.30
28	23 18 30.92	0.966	6 36 59.4	6.36	28 2 46.8	23 18 33.60	0.965	6 36 41.7	6.34
29	23 18 54.21	0.974	6 34 26.3	6.41	29 2 43.2	23 18 56.86	0.973	6 34 8.9	6.39
30	23 19 17.68	0.982	6 31 52.1	6.45	30 2 39.7	23 19 20.30	0.980	6 31 35.0	6.44
31	23 19 41.33	0.990	6 29 16.8	6.49	31 2 36.2	23 19 43.91	0.987	6 28 59.9	6.48
Feb. 1	23 20 5.16	0.997	6 26 40.5	6.53	1 2 32.6	23 20 7.70	0.995	6 26 23.9	6.52
2	23 20 29.17	1.004	6 24 3.2	6.58	2 2 29.1	23 20 31.67	1.002	6 23 46.9	6.56
3	23 20 53.34	1.011	6 21 24.9	6.62	3 2 25.6	23 20 55.80	1.009	6 21 8.9	6.60
4	23 21 17.68	1.018	6 18 45.6	6.66	4 2 22.1	23 21 20.10	1.016	6 18 29.9	6.64
5	23 21 42.18	1.024	6 16 5.4	6.69	5 2 18.5	23 21 44.55	1.022	6 15 50.0	6.68
6	23 22 6.84	1.031	6 13 24.4	6.73	6 2 15.0	23 22 9.16	1.029	6 13 9.3	6.71
7	23 22 31.65	1.037	6 10 42.5	6.76	7 2 11.5	23 22 33.92	1.035	6 10 27.7	6.75
8	23 22 56.60	1.043	6 7 59.8	6.80	8 2 8.0	23 22 58.82	1.040	6 7 45.4	6.78
9	23 23 21.69	1.048	6 5 16.3	6.83	9 2 4.4	23 23 23.86	1.046	6 5 2.2	6.82
10	23 23 46.92	1.054	6 2 32.0	6.86	10 2 0.9	23 23 49.04	1.052	6 2 18.2	6.85
11	23 24 12.28	1.059	5 59 47.0	6.89	11 1 57.4	23 24 14.35	1.057	5 59 33.5	6.87
12	23 24 37.77	1.065	5 57 1.3	6.92	12 1 53.9	23 24 39.78	1.062	5 56 48.2	6.90
13	23 25 3.38	1.070	5 54 14.9	6.95	13 1 50.4	23 25 5.34	1.067	5 54 2.2	6.93
14	23 25 29.11	1.075	5 51 27.9	6.98	14 1 46.9	23 25 31.01	1.072	5 51 15.5	6.96
15	23 25 54.96	1.079	5 48 40.3	7.00	15 1 43.4	23 25 56.81	1.077	5 48 28.3	6.98
16	23 26 20.91	1.084	5 45 52.0	7.03	16 1 39.9	23 26 22.71	1.081	5 45 40.3	7.00
17	23 26 46.97	1.088	5 43 3.1	7.05	17 1 36.4	23 26 48.72	1.086	5 42 51.8	7.03
18	23 27 13.13	1.092	5 40 13.7	7.07	18 1 32.9	23 27 14.82	1.090	5 40 2.8	7.05
19	23 27 39.39	1.096	5 37 23.7	7.09	19 1 29.4	23 27 41.03	1.094	5 37 13.2	7.08
20	23 28 5.74	1.100	5 34 33.3	7.11	20 1 25.9	23 28 7.32	1.097	5 34 23.1	7.10
21	23 28 32.19	1.104	5 31 42.4	7.13	21 1 22.4	23 28 33.71	1.101	5 31 32.6	7.11
22	23 28 58.72	1.108	5 28 51.0	7.15	22 1 18.9	23 29 0.18	1.105	5 28 41.6	7.13
23	23 29 25.34	1.111	5 25 59.2	7.17	23 1 15.4	23 29 26.74	1.108	5 25 50.2	7.15
24	23 29 52.03	1.114	5 23 7.0	7.19	24 1 11.9	23 29 53.37	1.111	5 22 58.4	7.16
25	23 30 18.80	1.117	5 20 14.5	7.20	25 1 8.5	23 30 20.08	1.114	5 20 6.3	7.18
26	23 30 45.64	1.120	5 17 21.6	7.21	26 1 5.0	23 30 46.85	1.117	5 17 13.8	7.19
27	23 31 12.55	1.122	5 14 28.4	7.22	27 1 1.5	23 31 13.70	1.120	5 14 21.0	7.21
28	23 31 39.52	1.125	5 11 34.9	7.24	28 0 58.0	23 31 40.61	1.122	5 11 27.9	7.22
29	23 32 6.55	1.127	5 8 41.1	7.25	29 0 54.5	23 32 7.57	1.125	5 8 34.5	7.23
30	23 32 33.63	+1.129	-5 5 47.1	+ 7.26	30 0 51.0	23 32 34.59	+1.127	-5 5 40.9	+ 7.24

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	23 32 6.55	+1.127	-5 8 41.1	+ 7.25	1 0 54.5	23 32 7.57	+1.125	-5 8 34.5	+ 7.23
2	23 32 33.63	1.129	5 5 47.1	7.26	2 0 51.0	23 32 34.59	1.127	5 5 40.9	7.24
3	23 33 0.76	1.131	5 2 52.9	7.26	3 0 47.5	23 33 1.66	1.129	5 2 47.1	7.24
4	23 33 27.93	1.133	4 59 58.6	7.27	4 0 44.1	23 33 28.76	1.130	4 59 53.2	7.25
5	23 33 55.14	1.135	4 57 4.1	7.27	5 0 40.6	23 33 55.91	1.132	4 56 59.2	7.25
6	23 34 22.39	1.136	4 54 9.6	7.28	6 0 37.1	23 34 23.09	1.133	4 54 5.1	7.26
7	23 34 49.67	1.137	4 51 15.0	7.28	7 0 33.6	23 34 50.31	1.134	4 51 10.9	7.26
8	23 35 16.97	1.138	4 48 20.3	7.28	8 0 30.1	23 35 17.54	1.135	4 48 16.6	7.26
9	23 35 44.29	1.138	4 45 25.6	7.28	9 0 26.7	23 35 44.80	1.136	4 45 22.4	7.27
10	23 36 11.63	1.139	4 42 30.9	7.28	10 0 23.2	23 36 12.07	1.137	4 42 28.1	7.26
11	23 36 38.99	1.140	4 39 36.2	7.28	11 0 19.7	23 36 39.37	1.137	4 39 33.8	7.26
12	23 37 6.35	1.140	4 36 41.6	7.27	12 0 16.2	23 37 6.66	1.137	4 36 39.6	7.25
13	23 37 33.72	1.140	4 33 47.1	7.27	13 0 12.7	23 37 33.97	1.138	4 33 45.6	7.25
14	23 38 1.09	1.140	4 30 52.8	7.26	14 0 9.3	23 38 1.27	1.137	4 30 51.7	7.24
15	23 38 28.45	1.140	4 27 58.7	7.25	15 0 5.8	23 38 28.56	1.137	4 27 58.0	7.24
					15 0 2.3	23 38 55.85	1.137	4 25 4.4	7.23
16	23 38 55.80	1.139	4 25 4.7	7.25	16 23 58.8	23 39 23.12	1.136	4 22 11.1	7.22
17	23 39 23.14	1.138	4 22 10.9	7.24	17 23 55.3	23 39 50.38	1.136	4 19 18.0	7.21
18	23 39 50.47	1.138	4 19 17.4	7.23	18 23 51.9	23 40 17.63	1.135	4 16 25.1	7.20
19	23 40 17.78	1.137	4 16 24.1	7.21	19 23 48.4	23 40 44.85	1.134	4 13 32.5	7.19
20	23 40 45.07	1.136	4 13 31.1	7.20	20 23 44.9	23 41 12.05	1.133	4 10 40.1	7.17
21	23 41 12.33	1.135	4 10 38.3	7.19	21 23 41.4	23 41 39.22	1.131	4 7 48.1	7.16
22	23 41 39.57	1.134	4 7 45.9	7.18	22 23 38.0	23 42 6.36	1.130	4 4 56.5	7.14
23	23 42 6.77	1.133	4 4 53.9	7.16	23 23 34.5	23 42 33.46	1.129	4 2 5.2	7.13
24	23 42 33.94	1.131	4 2 2.2	7.15	24 23 31.0	23 43 0.53	1.127	3 59 14.4	7.11
25	23 43 1.07	1.129	3 59 10.9	7.13	25 23 27.5	23 43 27.54	1.125	3 56 23.9	7.09
26	23 43 28.15	1.127	3 56 20.0	7.11	26 23 24.0	23 43 54.51	1.122	3 53 33.9	7.07
27	23 43 55.18	1.125	3 53 29.6	7.09	27 23 20.5	23 44 21.42	1.120	3 50 44.3	7.06
28	23 44 22.16	1.123	3 50 39.6	7.07	28 23 17.1	23 44 48.29	1.118	3 47 55.2	7.04
29	23 44 49.09	1.121	3 47 50.1	7.05	29 23 13.6	23 45 15.09	1.115	3 45 6.6	7.01
30	23 45 15.95	1.118	3 45 1.2	7.03	30 23 10.1	23 45 41.82	1.112	3 42 18.7	6.98
31	23 45 42.74	1.115	3 42 12.9	7.00	31 23 6.6	23 46 8.48	1.109	3 39 31.4	6.96
Apr. 1	23 46 9.47	1.112	3 39 25.2	6.98	1 23 3.1	23 46 35.07	1.106	3 36 44.7	6.93
2	23 46 36.12	1.109	3 36 38.1	6.95	2 22 59.6	23 47 1.59	1.103	3 33 58.7	6.90
3	23 47 2.70	1.106	3 33 51.7	6.92	3 22 56.1	23 47 28.02	1.100	3 31 13.3	6.88
4	23 47 29.19	1.102	3 31 5.9	6.89	4 22 52.6	23 47 54.37	1.096	3 28 28.6	6.85
5	23 47 55.60	1.099	3 28 20.9	6.86	5 22 49.1	23 48 20.63	1.092	3 25 44.7	6.81
6	23 48 21.92	1.095	3 25 36.6	6.83	6 22 45.6	23 48 46.79	1.088	3 23 1.5	6.78
7	23 48 48.14	1.091	3 22 53.1	6.80	7 22 42.1	23 49 12.85	1.084	3 20 19.2	6.75
8	23 49 14.26	1.086	3 20 10.4	6.76	8 22 38.6	23 49 38.90	1.079	3 17 37.6	6.71
9	23 49 40.27	1.082	3 17 28.5	6.73	9 22 35.1	23 50 4.66	1.075	3 14 56.9	6.68
10	23 50 6.18	1.077	3 14 47.4	6.69	10 22 31.6	23 50 30.40	1.070	3 12 17.0	6.64
11	23 50 31.98	1.073	3 12 7.2	6.66	11 22 28.1	23 50 56.03	1.065	3 9 38.0	6.60
12	23 50 57.66	1.068	3 9 27.9	6.62	12 22 24.6	23 51 21.54	1.061	3 7 0.1	6.56
13	23 51 23.23	1.063	3 6 49.6	6.58	13 22 21.1	23 51 46.94	1.055	3 4 23.0	6.53
14	23 51 48.68	1.058	3 4 12.2	6.54	14 22 17.6	23 52 12.20	1.050	3 1 46.8	6.49
15	23 52 14.00	1.053	3 1 35.7	6.50	15 22 14.1	23 52 37.35	1.045	2 59 11.6	6.45
16	23 52 39.20	1.047	2 59 0.2	6.46	16 22 10.6	23 53 2.36	1.039	2 56 37.4	6.40
17	23 53 4.26	1.042	2 56 25.7	6.42	17 22 7.0	23 53 27.24	1.034	2 54 4.3	6.36
18	23 53 29.19	1.036	2 53 52.3	6.37	18 22 3.5	23 53 51.98	1.028	2 51 32.2	6.31
19	23 53 53.98	1.030	2 51 19.9	6.33	19 22 0.0	23 54 16.58	1.022	2 49 1.2	6.27
20	23 54 18.63	1.024	2 48 48.6	6.28	20 21 56.5	23 54 41.04	1.016	2 46 31.2	6.23
21	23 54 43 14	1.018	2 46 18.3	6.24	21 21 53.0	23 55 5.35	1.010	2 44 2.3	6.18
22	23 55 7.50	1.012	2 43 49.2	6.19	22 21 49.4	23 55 29.51	1.004	2 41 34.7	6.13
23	23 55 31.70	1.005	2 41 21.3	6.14	23 21 45.9	23 55 53.52	0.997	2 39 8.1	6.08
24	23 55 55.75	0.998	2 38 54.5	6.09	24 21 42.4	23 56 17.25	0.989	2 36 42 8	6.03
25	23 56 19.63	0.992	2 36 28.9	6.04	25 21 38.8	23 56 41.03	0.983	2 34 18.7	5.98
26	23 56 43.35	0.985	2 34 4.6	5.99	26 21 35.3	23 57 4.54	0.976	2 31 55.8	5.93
27	23 57 6.90	0.978	2 31 41.5	5.94	27 21 31.7	23 57 27.88	0.969	2 29 34.2	5.87
28	23 57 30.28	0.971	2 29 19.7	5.88	28 21 28.2	23 57 51.05	0.962	2 27 13.9	5.82
29	23 57 53.49	0.963	2 26 59.2	5.83	29 21 24.6	23 58 14.04	0.954	2 24 55.0	5.76
30	23 58 16.51	0.955	2 24 40.1	5.77	30 21 21.1	23 58 36.84	0.946	2 22 37.4	5.70
31	23 58 39.35	+0.948	-2 22 22.3	+ 5.71	31 21 17.5	23 58 59.46	+0.938	-2 20 21.2	+ 5.65

SATURN, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	23 58 39.35	+0.948	−2 22 22.3	+ 5.71	1 21 17.5	23 58 59.46	+0.938	+2 20 21.2	+ 5.65
2	23 59 2.00	0.940	2 20 5.9	5.65	2 21 14.0	23 59 21.88	0.930	2 18 6.4	5.59
3	23 59 24.46	0.932	2 17 50.9	5.59	3 21 10.4	23 59 44.11	0.922	2 15 53.0	5.53
4	23 59 46.72	0.923	2 15 37.4	5.53	4 21 6.8	0 0 6.14	0.914	2 13 41.1	5.47
5	0 0 8.78	0.915	2 13 25.3	5.47	5 21 3.3	0 0 27.97	0.905	2 11 30.6	5.40
6	0 0 30.64	0.906	2 11 14.7	5.41	6 20 59.7	0 0 49.59	0.897	2 9 21.8	5.34
7	0 0 52.29	0.898	2 9 5.7	5.35	7 20 56.1	0 1 11.01	0.888	2 7 14.4	5.28
8	0 1 13.73	0.889	2 6 58.2	5.28	8 20 52.5	0 1 32.20	0.879	2 5 8.5	5.21
9	0 1 34.95	0.880	2 4 52.2	5.22	9 20 49.0	0 1 53.18	0.869	2 3 4.2	5.15
10	0 1 55.95	0.870	2 2 47.8	5.15	10 20 45.4	0 2 13.93	0.860	2 1 1.5	5.08
11	0 2 16.73	0.861	2 0 45.0	5.08	11 20 41.8	0 2 34.47	0.851	1 59 0.4	5.01
12	0 2 37.29	0.852	1 58 43.8	5.01	12 20 38.2	0 2 54.78	0.841	1 57 1.0	4.94
13	0 2 57.62	0.843	1 56 44.3	4.95	13 20 34.6	0 3 14.86	0.832	1 55 3.1	4.87
14	0 3 17.72	0.833	1 54 46.4	4.88	14 20 31.0	0 3 34.72	0.822	1 53 7.0	4.81
15	0 3 37.59	0.823	1 52 50.2	4.81	15 20 27.4	0 3 54.33	0.812	1 51 12.4	4.74
16	0 3 57.22	0.813	1 50 55.6	4.74	16 20 23.8	0 4 13.71	0.802	1 49 19.6	4.66
17	0 4 16.61	0.803	1 49 2.8	4.67	17 20 20.2	0 4 32.85	0.792	1 47 28.5	4.59
18	0 4 35.76	0.793	1 47 11.7	4.59	18 20 16.5	0 4 51.74	0.782	1 45 39.2	4.52
19	0 4 54.66	0.783	1 45 22.4	4.52	19 20 12.9	0 5 10.38	0.772	1 43 51.5	4.45
20	0 5 13.31	0.772	1 43 34.8	4.45	20 20 9.3	0 5 28.78	0.761	1 42 5.7	4.37
21	0 5 31.71	0.761	1 41 49.0	4.38	21 20 5.7	0 5 46.92	0.750	1 40 21.7	4.30
22	0 5 49.85	0.750	1 40 5.0	4.30	22 20 2.0	0 6 4.80	0.740	1 38 39.5	4.22
23	0 6 7.73	0.739	1 38 22.8	4.22	23 19 58.4	0 6 22.42	0.729	1 36 59.1	4.14
24	0 6 25.35	0.728	1 36 42.5	4.14	24 19 54.8	0 6 39.77	0.717	1 35 20.7	4.06
25	0 6 42.70	0.717	1 35 4.1	4.06	25 19 51.1	0 6 56.85	0.706	1 33 44.1	3.99
26	0 6 59.78	0.706	1 33 27.6	3.98	26 19 47.4	0 7 13.67	0.695	1 32 9.4	3.90
27	0 7 16.59	0.695	1 31 53.0	3.90	27 19 43.8	0 7 30.20	0.683	1 30 36.7	3.82
28	0 7 33.12	0.683	1 30 20.4	3.82	28 19 40.1	0 7 46.45	0.671	1 29 6.0	3.74
29	0 7 49.36	0.671	1 28 49.8	3.74	29 19 36.4	0 8 2.42	0.659	1 27 37.3	3.65
30	0 8 5.32	0.658	1 27 21.2	3.65	30 19 32.8	0 8 18.09	0.647	1 26 10.6	3.57
31	0 8 20.98	0.646	1 25 54.6	3.57	31 19 29.1	0 8 33.47	0.635	1 24 45.8	3.49
June 1	0 8 36.35	0.634	1 24 30.0	3.48	1 19 25.4	0 8 48.56	0.623	1 23 23.2	3.40
2	0 8 51.43	0.622	1 23 7.5	3.40	2 19 21.7	0 9 3.36	0.610	1 22 2.6	3.32
3	0 9 6.21	0.610	1 21 47.1	3.31	3 19 18.0	0 9 17.86	0.598	1 20 44.0	3.23
4	0 9 20.69	0.597	1 20 28.7	3.22	4 19 14.3	0 9 32.06	0.585	1 19 27.5	3.14
5	0 9 34.86	0.584	1 19 12.4	3.13	5 19 10.7	0 9 45.95	0.572	1 18 13.1	3.06
6	0 9 48.73	0.571	1 17 58.3	3.05	6 19 7.0	0 9 59.53	0.559	1 17 0.8	2.97
7	0 10 2.28	0.558	1 16 46.3	2.96	7 19 3.2	0 10 12.80	0.547	1 15 50.7	2.88
8	0 10 15.52	0.545	1 15 36.4	2.87	8 18 59.5	0 10 25.77	0.534	1 14 42.7	2.79
9	0 10 28.45	0.532	1 14 28.7	2.78	9 18 55.6	0 10 38.42	0.520	1 13 36.8	2.70
10	0 10 41.06	0.519	1 13 23.1	2.69	10 18 52.1	0 10 50.75	0.507	1 12 33.1	2.61
11	0 10 53.35	0.505	1 12 19.7	2.60	11 18 48.3	0 11 2.76	0.494	1 11 31.6	2.52
12	0 11 5.32	0.492	1 11 18.5	2.51	12 18 44.6	0 11 14.45	0.480	1 10 32.2	2.42
13	0 11 16.97	0.478	1 10 19.5	2.41	13 18 40.9	0 11 25.81	0.466	1 9 35.2	2.33
14	0 11 28.29	0.465	1 9 22.8	2.32	14 18 37.1	0 11 36.84	0.453	1 8 40.3	2.24
15	0 11 39.28	0.451	1 8 28.3	2.22	15 18 33.3	0 11 47.55	0.439	1 7 47.7	2.15
16	0 11 49.94	0.437	1 7 36.0	2.13	16 18 29.6	0 11 57.92	0.425	1 6 57.3	2.05
17	0 12 0.26	0.423	1 6 46.0	2.03	17 18 25.8	0 12 7.96	0.411	1 6 9.1	1.96
18	0 12 10.25	0.409	1 5 58.2	1.94	18 18 22.0	0 12 17.67	0.397	1 5 23.2	1.87
19	0 12 19.90	0.395	1 5 12.7	1.85	19 18 18.3	0 12 27.03	0.383	1 4 39.5	1.77
20	0 12 29.21	0.381	1 4 29.5	1.75	20 18 14.5	0 12 36.06	0.369	1 3 58.2	1.67
21	0 12 38.18	0.366	1 3 48.6	1.65	21 18 10.7	0 12 44.74	0.355	1 3 19.2	1.58
22	0 12 46.80	0.352	1 3 10.1	1.56	22 18 6.9	0 12 53.08	0.340	1 2 42.4	1.48
23	0 12 55.08	0.337	1 2 33.8	1.46	23 18 3.1	0 13 1.07	0.326	1 2 8.0	1.38
24	0 13 3.00	0.323	1 1 59.9	1.36	24 17 59.3	0 13 8.71	0.311	1 1 36.0	1.29
25	0 13 10.57	0.308	1 1 28.4	1.26	25 17 55.5	0 13 15.99	0.296	1 1 6.3	1.19
26	0 13 17.78	0.293	1 0 59.2	1.16	26 17 51.7	0 13 22.91	0.281	1 0 39.0	1.09
27	0 13 24.63	0.278	1 0 32.4	1.06	27 17 47.9	0 13 29.48	0.266	1 0 14.1	0.99
28	0 13 31.12	0.263	1 0 8.1	0.96	28 17 44.0	0 13 35.68	0.251	0 59 51.7	0.89
29	0 13 37.25	0.248	0 59 46.2	0.86	29 17 40.2	0 13 41.53	0.236	0 59 31.5	0.79
30	0 13 43.02	0.233	0 59 26.6	0.76	30 17 36.4	0 13 47.01	0.221	0 50 13.7	0.69
31	0 13 48.42	+0.218	−0 59 9.4	+ 0.66	31 17 32.5	0 13 52.14	+0.206	−0 58 58.4	+ 0.59

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	0 13 48.42	+0.218	−0 59 9.4	+ 0.66	1 17 32.5	0 13 52.14	+0.206	−0 58 58.4	+ 0.59
2	0 13 53.46	0.203	0 58 54.7	0.56	2 17 28.7	0 13 56.89	0.191	0 58 45.4	0.49
3	0 13 58.13	0.187	0 58 42.3	0.46	3 17 24.8	0 14 1.29	0.175	0 58 34.9	0.39
4	0 14 2.44	0.172	0 58 32.4	0.36	4 17 20.9	0 14 5.31	0.160	0 58 26.7	0.29
5	0 14 6.37	0.156	0 58 24.9	0.26	5 17 17.1	0 14 8.98	0.145	0 58 21.0	0.19
6	0 14 9.94	0.141	0 58 19.8	0.16	6 17 13.2	0 14 12.26	0.130	0 58 17.6	+ 0.09
7	0 14 13.13	0.125	0 58 17.1	+ 0.06	7 17 9.3	0 14 15.19	0.114	0 58 16.6	− 0.01
8	0 14 15.96	0.110	0 58 16.8	− 0.04	8 17 5.4	0 14 17.74	0.099	0 58 18.0	0.11
9	0 14 18.41	0.095	0 58 18.9	0.14	9 17 1.5	0 14 19.93	0.084	0 58 21.7	0.21
10	0 14 20.50	0.080	0 58 23.3	0.24	10 16 57.6	0 14 21.74	0.068	0 58 27.9	0.30
11	0 14 22.21	0.064	0 58 30.2	0.34	11 16 53.7	0 14 23.20	0.053	0 58 36.4	0.40
12	0 14 23.56	0.049	0 58 39.4	0.44	12 16 49.8	0 14 24.29	0.037	0 58 47.4	0.50
13	0 14 24.54	0.033	0 58 51.1	0.54	13 16 45.9	0 14 25.00	0.022	0 59 0.6	0.60
14	0 14 25.14	0.018	0 59 5.1	0.64	14 16 42.0	0 14 25.34	+0.007	0 59 16.3	0.70
15	0 14 25.37	+0.002	0 59 21.5	0.73	15 16 38.0	0 14 25.31	−0.009	0 59 34.3	0.80
16	0 14 25.23	−0.013	0 59 40.3	0.83	16 16 34.1	0 14 24.92	0.024	0 59 54.7	0.90
17	0 14 24.72	0.028	1 0 1.5	0.93	17 16 30.1	0 14 24.17	0.039	1 0 17.4	1.00
18	0 14 23.85	0.044	1 0 25.0	1.03	18 16 26.2	0 14 23.04	0.054	1 0 42.5	1.09
19	0 14 22.60	0.060	1 0 50.9	1.13	19 16 22.2	0 14 21.54	0.070	1 1 9.9	1.19
20	0 14 20.98	0.076	1 1 19.1	1.23	20 16 18.3	0 14 19.67	0.085	1 1 39.6	1.29
21	0 14 18.99	0.091	1 1 49.6	1.32	21 16 14.3	0 14 17.44	0.100	1 2 11.6	1.38
22	0 14 16.63	0.106	1 2 22.5	1.42	22 16 10.3	0 14 14.83	0.116	1 2 46.0	1.48
23	0 14 13.90	0.121	1 2 57.7	1.51	23 16 6.3	0 14 11.86	0.131	1 3 22.6	1.57
24	0 14 10.80	0.137	1 3 35.2	1.61	24 16 2.4	0 14 8.52	0.147	1 4 1.5	1.67
25	0 14 7.33	0.152	1 4 15.0	1.71	25 15 58.4	0 14 4.82	0.162	1 4 42.7	1.76
26	0 14 3.50	0.167	1 4 57.1	1.81	26 15 54.4	0 14 0.76	0.177	1 5 26.2	1.86
27	0 13 59.31	0.182	1 5 41.5	1.90	27 15 50.4	0 13 56.34	0.192	1 6 12.0	1.95
28	0 13 54.75	0.197	1 6 28.2	2.00	28 15 46.4	0 13 51.56	0.207	1 7 0.0	2.05
29	0 13 49.83	0.212	1 7 17.1	2.09	29 15 42.3	0 13 46.42	0.222	1 7 50.3	2.14
30	0 13 44.56	0.227	1 8 8.3	2.18	30 15 38.3	0 13 40.93	0.236	1 8 42.7	2.23
31	0 13 38.93	0.242	1 9 1.6	2.27	31 15 34.3	0 13 35.08	0.251	1 9 37.3	2.32
Aug. 1	0 13 32.94	0.257	1 9 57.1	2.36	1 15 30.3	0 13 28.88	0.265	1 10 34.0	2.41
2	0 13 26.60	0.271	1 10 54.7	2.44	2 15 26.2	0 13 22.34	0.279	1 11 32.8	2.50
3	0 13 19.92	0.286	1 11 54.4	2.53	3 15 22.2	0 13 15.45	0.294	1 12 33.7	2.58
4	0 13 12.89	0.300	1 12 56.2	2.62	4 15 18.1	0 13 8.22	0.308	1 13 36.7	2.67
5	0 13 5.52	0.314	1 14 0.1	2.71	5 15 14.1	0 13 0.66	0.322	1 14 41.7	2.75
6	0 12 57.82	0.328	1 15 6.0	2.79	6 15 10.0	0 12 52.77	0.336	1 15 48.7	2.83
7	0 12 49.78	0.342	1 16 13.9	2.87	7 15 5.9	0 12 44.55	0.349	1 16 57.6	2.91
8	0 12 41.42	0.355	1 17 23.7	2.95	8 15 1.9	0 12 36.01	0.363	1 18 8.5	2.99
9	0 12 22.73	0.369	1 18 35.5	3.03	9 14 57.8	0 12 27.14	0.376	1 19 21.3	3.07
10	0 12 23.72	0.382	1 19 49.2	3.11	10 14 53.7	0 12 17.96	0.389	1 20 35.9	3.15
11	0 12 14.39	0.395	1 21 4.7	3.19	11 14 49.6	0 12 8.46	0.402	1 21 52.3	3.22
12	0 12 4.75	0.408	1 22 22.1	3.26	12 14 45.5	0 11 58.66	0.415	1 23 10.6	3.30
13	0 11 54.80	0.421	1 23 41.3	3.34	13 14 41.4	0 11 48.54	0.427	1 24 30.7	3.37
14	0 11 44.54	0.434	1 25 2.3	3.41	14 14 37.3	0 11 38.14	0.440	1 25 52.5	3.44
15	0 11 33.99	0.446	1 26 25.0	3.48	15 14 33.2	0 11 27.43	0.452	1 27 16.0	3.51
16	0 11 23.14	0.458	1 27 49.4	3.55	16 14 29.1	0 11 16.44	0.464	1 28 41.2	3.58
17	0 11 12.00	0.470	1 29 15.5	3.62	17 14 24.9	0 11 5.16	0.476	1 30 8.0	3.65
18	0 11 0.57	0.482	1 30 43.2	3.69	18 14 20.8	0 10 53.59	0.487	1 31 36.5	3.72
19	0 10 48.86	0.494	1 32 12.6	3.76	19 14 16.7	0 10 41.76	0.499	1 33 6.5	3.78
20	0 10 36.88	0.505	1 33 43.5	3.82	20 14 12.6	0 10 29.65	0.510	1 34 38.1	3.85
21	0 10 24.62	0.516	1 35 16.0	3.88	21 14 8.4	0 10 17.27	0.521	1 36 11.1	3.91
22	0 10 12.10	0.527	1 36 49.9	3.94	22 14 4.3	0 10 4.63	0.532	1 37 45.6	3.97
23	0 9 59.31	0.538	1 38 25.3	4.00	23 14 0.1	0 9 51.73	0.542	1 39 21.4	4.02
24	0 9 46.27	0.548	1 40 2.0	4.06	24 13 56.0	0 9 38.58	0.553	1 40 58.7	4.08
25	0 9 32.98	0.558	1 41 40.1	4.12	25 13 51.8	0 9 25.19	0.563	1 42 37.3	4.13
26	0 9 19.45	0.568	1 43 19.5	4.17	26 13 47.7	0 9 11.56	0.573	1 44 17.1	4.18
27	0 9 5.69	0.578	1 45 0.1	4.22	27 13 43.5	0 8 57.71	0.582	1 45 58.1	4.23
28	0 8 51.70	0.587	1 46 41.9	4.26	28 13 39.3	0 8 43.64	0.591	1 47 40.3	4.28
29	0 8 37.50	0.596	1 48 24.8	4.31	29 13 35.2	0 8 29.35	0.600	1 49 23.5	4.32
30	0 8 23.08	0.605	1 50 8.8	4.36	30 13 31.0	0 8 14.86	0.608	1 51 7.9	4.36
31	0 8 8.46	−0.613	−1 51 53.9	− 4.40	31 13 26.8	0 8 0.17	−0.616	−1 52 53.2	− 4.40

SATURN, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	0 7 53.64	−0.621	−1 53 39.9	− 4.44	1 13 22.6	0 7 45.30	−0.624	−1 54 39.5	− 4.44
2	0 7 38.64	0.629	1 55 26.9	4.48	2 13 18.5	0 7 30.23	0.631	1 56 26.6	4.48
3	0 7 23.45	0.636	1 57 14.7	4.51	3 13 14.3	0 7 14.99	0.638	1 58 14.6	4.51
4	0 7 8.09	0.643	1 59 3.3	4.54	4 13 10.1	0 6 59.58	0.645	2 0 3.2	4.54
5	0 6 52.56	0.650	2 0 52.6	4.57	5 13 5.9	0 6 44.02	0.652	2 1 52.6	4.57
6	0 6 36.88	0.656	2 2 42.6	4.60	6 13 1.7	0 6 28.30	0.658	2 3 42.7	4.60
7	0 6 21.05	0.662	2 4 33.3	4.62	7 12 57.5	0 6 12.44	0.664	2 5 33.3	4.62
8	0 6 5.08	0.668	2 6 24.5	4.64	8 12 53.3	0 5 56.45	0.670	2 7 24.4	4.64
9	0 5 48.98	0.673	2 8 16.2	4.66	9 12 49.1	0 5 40.33	0.675	2 9 16.1	4.66
10	0 5 32.76	0.678	2 10 8.4	4.68	10 12 44.9	0 5 24.09	0.679	2 11 8.2	4.68
11	0 5 16.42	0.683	2 12 1.0	4.70	11 12 40.7	0 5 7.75	0.684	2 13 0.7	4.69
12	0 4 59.98	0.687	2 13 54.0	4.71	12 12 36.5	0 4 51.31	0.688	2 14 53.5	4.70
13	0 4 43.44	0.691	2 15 47.3	4.72	13 12 32.3	0 4 34.76	0.692	2 16 46.6	4.71
14	0 4 26.80	0.695	2 17 40.8	4.73	14 12 28.1	0 4 18.13	0.695	2 18 39.9	4.72
15	0 4 10.08	0.698	2 19 34.5	4.74	15 12 23.9	0 4 1.42	0.698	2 20 33.4	4.72
16	0 3 53.29	0.701	2 21 28.4	4.75	16 12 19.7	0 3 44.64	0.701	2 22 26.9	4.73
17	0 3 36.43	0.704	2 23 22.3	4.75	17 12 15.5	0 3 27.79	0.703	2 24 20.5	4.73
18	0 3 19.51	0.706	2 25 16.3	4.75	18 12 11.2	0 3 10.89	0.705	2 26 14.0	4.73
19	0 3 2.54	0.708	2 27 10.2	4.74	19 12 7.0	0 2 53.95	0.707	2 28 7.5	4.72
20	0 2 45.54	0.709	2 29 4.0	4.74	20 12 2.8	0 2 36.98	0.708	2 30 1.0	4.72
21	0 2 28.51	0.710	2 30 57.7	4.73	21 11 58.6	0 2 19.99	0.709	2 31 54.3	4.71
22	0 2 11.46	0.711	2 32 51.1	4.72	22 11 54.4	0 2 2.99	0.709	2 33 47.3	4.70
23	0 1 54.40	0.711	2 34 44.2	4.71	23 11 50.2	0 1 45.98	0.709	2 35 39.9	4.68
24	0 1 37.33	0.711	2 36 37.0	4.69	24 11 46.0	0 1 29.96	0.708	2 37 32.1	4.66
25	0 1 20.28	0.710	2 38 29.3	4.67	25 11 41.7	0 1 11.97	0.707	2 39 23.8	4.64
26	0 1 3.24	0.709	2 40 21.2	4.65	26 11 37.5	0 0 55.00	0.706	2 41 15.1	4.62
27	0 0 46.23	0.708	2 42 12.5	4.62	27 11 33.3	0 0 38.06	0.705	2 43 5.8	4.60
28	0 0 29.25	0.706	2 44 3.2	4.60	28 11 29.1	0 0 21.15	0.703	2 44 55.9	4.57
29	0 0 12.32	0.704	2 45 53.2	4.57	29 11 24.9	0 0 4.30	0.701	2 46 45.3	4.54
30	23 59 55.45	0.701	2 47 42.5	4.54	30 11 20.7	23 59 47.51	0.698	2 48 33.9	4.51
Oct. 1	23 59 38.65	0.698	2 49 30.9	4.50	1 11 16.5	23 59 30.79	0.695	2 50 21.6	4.47
2	23 59 21.93	0.695	2 51 18.5	4.46	2 11 12.3	23 59 14.16	0.691	2 52 8.4	4.43
3	23 59 5.29	0.691	2 53 5.2	4.42	3 11 8.1	23 58 57.61	0.687	2 53 54.4	4.39
4	23 58 48.74	0.687	2 54 50.9	4.38	4 11 3.9	23 58 41.15	0.683	2 55 39.3	4.35
5	23 58 32.30	0.683	2 56 35.6	4.34	5 10 59.7	23 58 24.81	0.678	2 57 23.2	4.31
6	23 58 15.97	0.678	2 58 19.2	4.29	6 10 55.5	23 58 8.58	0.673	2 59 6.0	4.26
7	23 57 59.76	0.673	3 0 1.6	4.24	7 10 51.3	23 57 52.47	0.668	3 0 47.6	4.21
8	23 57 43.67	0.667	3 1 42.9	4.19	8 10 47.1	23 57 36.49	0.663	3 2 28.0	4.16
9	23 57 27.72	0.661	3 3 22.9	4.14	9 10 42.9	23 57 20.65	0.657	3 4 7.2	4.11
10	23 57 11.92	0.655	3 5 1.7	4.09	10 10 38.7	23 57 4.96	0.650	3 5 45.1	4.05
11	23 56 56.27	0.648	3 6 39.1	4.03	11 10 34.5	23 56 49.43	0.643	3 7 21.6	3.99
12	23 56 40.79	0.641	3 8 15.1	3.97	12 10 30.3	23 56 34.07	0.636	3 8 56.7	3.93
13	23 56 25.48	0.634	3 9 49.7	3.91	13 10 26.1	23 56 18.88	0.629	3 10 30.4	3.87
14	23 56 10.34	0.626	3 11 22.8	3.85	14 10 21.9	23 56 3.86	0.621	3 12 2.6	3.81
15	23 55 55.39	0.618	3 12 54.4	3.78	15 10 17.7	23 55 49.04	0.613	3 13 33.3	3.74
16	23 55 40.64	0.610	3 14 24.4	3.72	16 10 13.6	23 55 34.42	0.605	3 15 2.3	3.68
17	23 55 26.09	0.602	3 15 52.8	3.65	17 10 9.4	23 55 20.00	0.596	3 16 29.8	3.61
18	23 55 11.74	0.593	3 17 19.5	3.58	18 10 5.2	23 55 5.78	0.587	3 17 55.5	3.54
19	23 54 57.61	0.584	3 18 44.5	3.50	19 10 1.1	23 54 51.78	0.578	3 19 19.5	3.47
20	23 54 43.71	0.575	3 20 7.7	3.43	20 9 56.9	23 54 38.01	0.569	3 20 41.7	3.39
21	23 54 30.04	0.565	3 21 29.1	3.35	21 9 52.7	23 54 24.48	0.559	3 22 2.1	3.31
22	23 54 16.60	0.555	3 22 48.7	3.27	22 9 48.6	23 54 11.18	0.549	3 23 20.7	3.23
23	23 54 3.42	0.544	3 24 6.3	3.19	23 9 44.4	23 53 58.14	0.538	3 24 37.3	3.15
24	23 53 50.49	0.533	3 25 22.0	3.11	24 9 40.3	23 53 45.35	0.527	3 25 52.0	3.07
25	23 53 37.83	0.522	3 26 35.7	3.03	25 9 36.1	23 53 32.83	0.516	3 27 4.7	2.99
26	23 53 25.43	0.510	3 27 47.3	2.95	26 9 32.0	23 53 20.58	0.505	3 28 15.3	2.90
27	23 53 13.31	0.498	3 28 56.9	2.86	27 9 27.9	23 53 8.60	0.493	3 29 23.9	2.81
28	23 53 1.48	0.487	3 30 4.4	2.77	28 9 23.8	23 52 56.92	0.481	3 30 30.3	2.72
29	23 52 49.94	0.475	3 31 9.7	2.67	29 9 19.6	23 52 45.52	0.469	3 31 34.6	2.63
30	23 52 38.69	0.463	3 32 12.8	2.58	30 9 15.5	23 52 34.42	0.456	3 32 36.6	2.54
31	23 52 27.74	0.450	3 33 13.7	2.49	31 9 11.4	23 52 23.62	0.443	3 33 36.5	2.45
32	23 52 17.10	−0.437	−3 34 12.4	− 2.40	32 9 7.3	23 52 13.13	−0.430	−3 34 34.2	− 2.36

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	23 52 17.10	−0.437	−3 34 12.4	− 2.40	1 9 7.3	23 52 13.13	−0.430	−3 34 34.2	− 2.36
2	23 52 6.78	0.423	3 35 8.8	2.30	2 9 3.2	23 52 2.96	0.417	3 35 29.6	2.26
3	23 51 56.78	0.410	3 36 2.9	2.21	3 8 59.1	23 51 53.11	0.404	3 36 22.6	2.17
4	23 51 47.10	0.396	3 36 54.7	2.11	4 8 55.0	23 51 43.58	0.390	3 37 13.4	2.07
5	23 51 37.75	0.383	3 37 44.2	2.01	5 8 51.0	23 51 34.38	0.376	3 38 1.8	1.97
6	23 51 28.73	0.369	3 38 31.3	1.91	6 8 46.9	23 51 25.51	0.362	3 38 47.9	1.87
7	23 51 20.05	0.355	3 39 16.0	1.81	7 8 42.8	23 51 16.98	0.348	3 39 31.6	1.77
8	23 51 11.71	0.340	3 39 58.3	1.71	8 8 38.7	23 51 8.79	0.334	3 40 12.9	1.67
9	23 51 3.71	0.326	3 40 38.2	1.61	9 8 34.7	23 51 0.93	0.320	3 40 51.9	1.57
10	23 50 56.06	0.311	3 41 15.6	1.51	10 8 30.6	23 50 53.43	0.305	3 41 28.3	1.47
11	23 50 48.77	0.297	3 41 50.6	1.41	11 8 26.6	23 50 46.28	0.291	3 42 2.3	1.36
12	23 50 41.83	0.282	3 42 23.1	1.30	12 8 22.5	23 50 39.49	0.276	3 42 33.9	1.26
13	23 50 35.24	0.267	3 42 53.1	1.20	13 8 18.5	23 50 33.04	0.261	3 43 2.9	1.16
14	23 50 29.02	0.251	3 43 20.6	1.09	14 8 14.4	23 50 26.97	0.246	3 43 29.5	1.06
15	23 50 23.17	0.236	3 43 45.6	0.99	15 8 10.4	23 50 21.26	0.231	3 43 53.5	0.95
16	23 50 17.69	0.221	3 44 8.0	0.88	16 8 6.4	23 50 15.93	0.215	3 44 15.0	0.85
17	23 50 12.58	0.205	3 44 27.9	0.78	17 8 2.4	23 50 10.96	0.199	3 44 34.0	0.74
18	23 50 7.85	0.189	3 44 45.2	0.67	18 7 58.4	23 50 6.37	0.184	3 44 50.4	0.63
19	23 50 3.49	0.174	3 44 59.9	0.56	19 7 54.4	23 50 2.14	0.168	3 45 4.2	0.52
20	23 49 59.51	0.158	3 45 12.1	0.45	20 7 50.4	23 49 58.30	0.152	3 45 15.5	0.41
21	23 49 55.92	0.142	3 45 21.6	0.34	21 7 46.4	23 49 54.84	0.136	3 45 24.1	0.30
22	23 49 52.72	0.125	3 45 28.5	0.23	22 7 42.4	23 49 51.77	0.120	3 45 30.1	0.19
23	23 49 49.91	0.109	3 45 32.7	0.12	23 7 38.4	23 49 49.09	0.104	3 45 33.5	− 0.09
24	23 49 47.49	0.093	3 45 34.4	− 0.01	24 7 34.5	23 49 46.80	0.087	3 45 34.3	+ 0.02
25	23 49 45.45	0.077	3 45 33.4	+ 0.10	25 7 30.5	23 49 44.89	0.071	3 45 32.5	0.13
26	23 49 43.81	0.060	3 45 29.8	0.21	26 7 26.5	23 49 43.38	0.055	3 45 28.1	0.24
27	23 49 42.56	0.044	3 45 23.5	0.32	27 7 22.6	23 49 42.25	0.038	3 45 21.0	0.35
28	23 49 41.71	0.027	3 45 14.6	0.42	28 7 18.6	23 49 41.53	0.022	3 45 11.4	0.46
29	23 49 41.26	−0.011	3 45 3.1	0.53	29 7 14.7	23 49 41.20	−0.005	3 44 59.1	0.57
30	23 49 41.21	+0.006	3 44 49.0	0.64	30 7 10.8	23 49 41.27	+0.011	3 44 44.2	0.68
Dec. 1	23 49 41.55	0.023	3 44 32.2	0.75	1 7 6.8	23 49 41.73	0.028	3 44 26.7	0.79
2	23 49 42.30	0.039	3 44 12.8	0.86	2 7 2.9	23 49 42.60	0.044	3 44 6.6	0.89
3	23 49 43.44	0.056	3 43 50.8	0.97	3 6 59.0	23 49 43.85	0.060	3 43 43.9	1.00
4	23 49 44.98	0.072	3 43 26.2	1.08	4 6 55.1	23 49 45.50	0.077	3 43 18.6	1.11
5	23 49 46.92	0.089	3 42 59.0	1.19	5 6 51.2	23 49 47.55	0.093	3 42 50.7	1.21
6	23 49 49.26	0.106	3 42 29.2	1.30	6 6 47.3	23 49 49.99	0.110	3 42 20.3	1.32
7	23 49 51.99	0.122	3 41 56.8	1.41	7 6 43.4	23 49 52.82	0.126	3 41 47.2	1.43
8	23 49 55.11	0.138	3 41 21.9	1.51	8 6 39.6	23 49 56.04	0.142	3 41 11.7	1.53
9	23 49 58.63	0.155	3 40 44.4	1.62	9 6 35.7	23 49 59.66	0.159	3 40 33.6	1.64
10	23 50 2.53	0.171	3 40 4.4	1.72	10 6 31.8	23 50 3.66	0.175	3 39 53.0	1.75
11	23 50 6.83	0.187	3 39 21.8	1.83	11 6 28.0	23 50 8.05	0.191	3 39 9.9	1.85
12	23 50 11.52	0.203	3 38 36.7	1.93	12 6 24.1	23 50 12.83	0.207	3 38 24.3	1.95
13	23 50 16.60	0.220	3 37 49.1	2.04	13 6 20.3	23 50 18.00	0.223	3 37 36.1	2.06
14	23 50 22.07	0.236	3 36 59.0	2.14	14 6 16.4	23 50 23.56	0.240	3 36 45.5	2.16
15	23 50 27.93	0.252	3 36 6.4	2.25	15 6 12.6	23 50 29.51	0.256	3 35 52.4	2.26
16	23 50 34.17	0.268	3 35 11.3	2.35	16 6 8.8	23 50 35.83	0.272	3 34 56.8	2.36
17	23 50 40.80	0.284	3 34 13.8	2.45	17 6 4.9	23 50 42.54	0.288	3 33 58.9	2.47
18	23 50 47.81	0.300	3 33 13.8	2.55	18 6 1.1	23 50 49.63	0.304	3 32 58.4	2.57
19	23 50 55.20	0.316	3 32 11.3	2.65	19 5 57.3	23 50 57.09	0.319	3 31 55.5	2.67
20	23 51 2.98	0.332	3 31 6.4	2.75	20 5 53.5	23 51 4.95	0.335	3 30 50.2	2.77
21	23 51 11.14	0.348	3 29 59.1	2.85	21 5 49.7	23 51 13.18	0.351	3 29 42.4	2.87
22	23 51 19.68	0.364	3 28 49.4	2.95	22 5 45.9	23 51 21.79	0.366	3 28 32.3	2.97
23	23 51 28.59	0.380	3 27 37.3	3.05	23 5 42.2	23 51 30.77	0.382	3 27 19.8	3.07
24	23 51 37.87	0.395	3 26 22.8	3.15	24 5 38.4	23 51 40.11	0.397	3 26 4.9	3.17
25	23 51 47.53	0.410	3 25 6.0	3.25	25 5 34.6	23 51 49.83	0.412	3 24 47.8	3.26
26	23 51 57.56	0.425	3 23 46.8	3.35	26 5 30.8	23 51 59.92	0.427	3 23 28.2	3.36
27	23 52 7.95	0.440	3 22 25.4	3.45	27 5 27.1	23 52 10.36	0.442	3 22 6.5	3.45
28	23 52 18.70	0.455	3 21 1.7	3.54	28 5 23.3	23 52 21.16	0.457	3 20 42.5	3.54
29	23 52 29.81	0.470	3 19 35.7	3.63	29 5 19.6	23 52 32.32	0.472	3 19 16.3	3.64
30	23 52 41.28	0.485	3 18 7.5	3.72	30 5 15.8	23 52 43.84	0.487	3 17 47.8	3.73
31	23 52 53.10	0.500	3 16 37.2	3.81	31 5 12.1	23 52 55.71	0.502	3 16 17.3	3.82
32	23 53 5.27	+0.514	−3 15 4.7	+ 3.90	32 5 8.4	23 53 7.92	+0.517	−3 14 44.6	+ 3.91

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	10 6 12.82	−0.226	+12 29 53.9	+ 1.34	0 15 22.8	10 6 9.31	−0.231	+12 30 14.7	+ 1.36
1	10 6 7.29	0.234	12 30 26.5	1.38	1 15 18.7	10 6 3.67	0.239	12 30 47.9	1.40
2	10 6 1.58	0.241	12 31 0.0	1.42	2 15 14.6	10 5 57.86	0.246	12 31 21.9	1.44
3	10 5 55.69	0.249	12 31 34.5	1.46	3 15 10.6	10 5 51.87	0.253	12 31 56.8	1.48
4	10 5 49.63	0.256	12 32 9.9	1.49	4 15 6.6	10 5 45.72	0.260	12 32 32.7	1.51
5	10 5 43.39	0.263	12 32 46.2	1.53	5 15 2.5	10 5 39.40	0.267	12 33 9.4	1.55
6	10 5 36.99	0.270	12 33 23.4	1.57	6 14 58.5	10 5 32.91	0.274	12 33 47.0	1.58
7	10 5 30.42	0.277	12 34 1.4	1.60	7 14 54.4	10 5 26.26	0.281	12 34 25.5	1.62
8	10 5 23.69	0.284	12 34 40.3	1.64	8 14 50.4	10 5 19.45	0.287	12 35 4.8	1.65
9	10 5 16.80	0.291	12 35 20.0	1.67	9 14 46.4	10 5 12.48	0.294	12 35 44.9	1.69
10	10 5 9.75	0.297	12 36 0.5	1.70	10 14 42.3	10 5 5.35	0.300	12 36 25.7	1.72
11	10 5 2.54	0.303	12 36 41.8	1.73	11 14 38.3	10 4 58.08	0.306	12 37 7.3	1.75
12	10 4 55.19	0.309	12 37 23.8	1.77	12 14 34.2	10 4 50.66	0.312	12 37 49.7	1.78
13	10 4 47.69	0.315	12 38 6.6	1.80	13 14 30.2	10 4 43.09	0.318	12 38 32.9	1.81
14	10 4 40.06	0.320	12 38 50.2	1.83	14 14 26.1	10 4 35.39	0.323	12 39 16.7	1.84
15	10 4 32.28	0.326	12 39 34.4	1.86	15 14 22.0	10 4 27.55	0.329	12 40 1.2	1.87
16	10 4 24.36	0.332	12 40 19.3	1.88	16 14 18.0	10 4 19.58	0.334	12 40 46.3	1.90
17	10 4 16.32	0.338	12 41 4.8	1.91	17 14 13.9	10 4 11.48	0.340	12 41 32.1	1.92
18	10 4 8.14	0.343	12 41 51.0	1.94	18 14 9.8	10 4 3.26	0.345	12 42 18.6	1.95
19	10 3 59.84	0.348	12 42 37.8	1.96	19 14 5.8	10 3 54.90	0.350	12 43 5.6	1.97
20	10 3 51.41	0.353	12 43 25.2	1.98	20 14 1.7	10 3 46.43	0.355	12 43 53.2	2.00
21	10 3 42.87	0.358	12 44 13.2	2.01	21 13 57.6	10 3 37.84	0.360	12 44 41.4	2.02
22	10 3 34.21	0.363	12 45 1.8	2.03	22 13 53.5	10 3 29.14	0.365	12 45 30.1	2.04
23	10 3 25.43	0.367	12 45 50.9	2.06	23 13 49.4	10 3 20.33	0.369	12 46 19.4	2.06
24	10 3 16.55	0.372	12 46 40.5	2.08	24 13 45.4	10 3 11.42	0.373	12 47 9.1	2.08
25	10 3 7.57	0.376	12 47 30.6	2.10	25 13 41.3	10 3 2.40	0.378	12 47 59.4	2.10
26	10 2 58.49	0.380	12 48 21.1	2.12	26 13 37.2	10 2 53.29	0.382	12 48 50.1	2.12
27	10 2 49.31	0.384	12 49 12.1	2.13	27 13 33.1	10 2 44.08	0.385	12 49 41.2	2.14
28	10 2 40.04	0.388	12 50 3.5	2.15	28 13 29.0	10 2 34.79	0.389	12 50 32.6	2.15
29	10 2 30.68	0.392	12 50 55.4	2.17	29 13 25.0	10 2 25.41	0.392	12 51 24.5	2.17
30	10 2 21.24	0.395	12 51 47.6	2.18	30 13 20.9	10 2 15.96	0.396	12 52 16.8	2.18
31	10 2 11.72	0.398	12 52 40.1	2.20	31 13 16.8	10 2 6.43	0.399	12 53 9.3	2.20
Feb. 1	10 2 2.13	0.401	12 53 33.0	2.21	1 13 12.7	10 1 56.83	0.402	12 54 2.2	2.21
2	10 1 52.48	0.404	12 54 26.2	2.22	2 13 8.6	10 1 47.16	0.404	12 54 55.4	2.22
3	10 1 42.75	0.407	12 55 19.6	2.23	3 13 4.5	10 1 37.43	0.407	12 55 48.9	2.23
4	10 1 32.96	0.409	12 56 13.3	2.24	4 13 0.4	10 1 27.63	0.409	12 56 42.5	2.24
5	10 1 23.12	0.411	12 57 7.2	2.25	5 12 56.3	10 1 17.79	0.411	12 57 36.4	2.25
6	10 1 13.22	0.413	12 58 1.3	2.25	6 12 52.2	10 1 7.90	0.413	12 58 30.4	2.25
7	10 1 3.28	0.415	12 58 55.6	2.26	7 12 48.1	10 0 57.96	0.415	12 59 24.6	2.26
8	10 0 53.30	0.417	12 59 50.0	2.27	8 12 44.0	10 0 47.99	0.417	13 0 19.0	2.27
9	10 0 43.29	0.418	13 0 44.5	2.27	9 12 39.9	10 0 37.98	0.418	13 1 13.4	2.27
10	10 0 33.24	0.419	13 1 39.2	2.27	10 12 35.8	10 0 27.95	0.419	13 2 7.9	2.27
11	10 0 23.16	0.420	13 2 33.8	2.28	11 12 31.7	10 0 17.89	0.420	13 3 2.4	2.27
12	10 0 13.06	0.421	13 3 28.5	2.28	12 12 27.6	10 0 7.81	0.421	13 3 57.0	2.27
13	10 0 2.94	0.422	13 4 23.3	2.28	13 12 23.5	9 59 57.71	0.421	13 4 51.5	2.27
14	9 59 52.81	0.422	13 5 18.0	2.28	14 12 19.4	9 59 47.60	0.422	13 5 46.0	2.27
15	9 59 42.67	0.423	13 6 12.6	2.27	15 12 15.3	9 59 37.48	0.422	13 6 40.5	2.27
16	9 59 32.52	0.423	13 7 7.2	2.27	16 12 11.2	9 59 27.36	0.422	13 7 34.9	2.27
17	9 59 22.37	0.423	13 8 1.8	2.27	17 12 7.1	9 59 17.25	0.422	13 8 29.3	2.26
18	9 59 12.23	0.423	13 8 56.2	2.26	18 12 3.0	9 59 7.14	0.421	13 9 23.5	2.26
19	9 59 2.09	0.422	13 9 50.5	2.26	19 11 58.9	9 58 57.04	0.421	13 10 17.6	2.25
20	9 58 51.97	0.422	13 10 44.6	2.25	20 11 54.8	9 58 46.95	0.420	13 11 11.5	2.25
21	9 58 41.86	0.421	13 11 38.6	2.24	21 11 50.7	9 58 36.88	0.419	13 12 5.2	2.24
22	9 58 31.77	0.420	13 12 32.4	2.24	22 11 46.6	9 58 26.83	0.418	13 12 58.8	2.23
23	9 58 21.71	0.419	13 13 26.0	2.23	23 11 42.5	9 58 16.81	0.417	13 13 52.1	2.21
24	9 58 11.68	0.417	13 14 19.4	2.22	24 11 38.4	9 58 6.83	0.416	13 14 45.1	2.20
25	9 58 1.69	0.416	13 15 12.4	2.21	25 11 34.3	9 57 56.88	0.414	13 15 37.9	2.19
26	9 57 51.73	0.414	13 16 5.2	2.19	26 11 30.2	9 57 46.97	0.412	13 16 30.4	2.18
27	9 57 41.82	0.412	13 16 57.7	2.18	27 11 26.1	9 57 37.11	0.410	13 17 22.6	2.17
28	9 57 31.95	0.410	13 17 49.8	2.17	28 11 22.0	9 57 27.30	0.408	13 18 14.4	2.15
29	9 57 22.14	−0.408	+13 18 41.6	+ 2.15	29 11 17.9	9 57 17.54	−0.406	+13 19 5.8	+ 2.13

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	9 57 22.14	-0.408	+13 18 41.6	+ 2.15	1 11 17.9	9 57 17.54	-0.406	+13 19 5.8	+ 2.13
2	9 57 12.38	0.405	13 19 33.0	2 13	2 11 13.8	9 57 7.84	0.403	13 19 56.9	2.12
3	9 57 2 69	0.402	13 20 24.0	2.11	3 11 9.7	9 56 58.21	0.400	13 20 47.5	2.10
4	9 56 53.07	0.400	13 21 14.5	2.09	4 11 5.6	9 56 48.64	0.397	13 21 37.7	2.08
5	9 56 43.51	0.397	13 22 4.5	2.07	5 11 1.6	9 56 39.15	0.395	13 22 27.4	2.06
6	9 56 34.04	0.393	13 22 54.1	2.06	6 10 57.5	9 56 29.73	0.391	13 23 16.6	2.04
7	9 56 24.64	0.389	13 23 43.2	2.04	7 10 53.4	9 56 20.40	0.387	13 24 5.3	2.02
8	9 56 15.33	0.386	13 24 31.8	2.01	8 10 49.3	9 56 11.16	0.383	13 24 53.5	2.00
9	9 56 6.11	0.382	13 25 19.8	1.99	9 10 45.2	9 56 2.00	0.379	13 25 41.2	1.97
10	9 55 56.97	0.378	13 26 7.3	1.96	10 10 41.2	9 55 52.94	0.375	13 26 28.2	1.95
11	9 55 47.94	0.374	13 26 54.1	1.94	11 10 37.1	9 55 43.97	0.371	13 27 14.7	1.92
12	9 55 39.01	0.370	13 27 40.4	1.92	12 10 33.0	9 55 35.11	0.367	13 28 0.6	1.90
13	9 55 30.18	0.366	13 28 26.0	1.89	13 10 28.9	9 55 26.35	0 362	13 28 45.8	1.87
14	9 55 21.46	0.361	13 29 11.0	1.86	14 10 24.9	9 55 17.71	0.358	13 29 30.3	1.84
15	9 55 12.85	0.356	13 29 55.3	1.83	15 10 20.8	9 55 9.17	0.353	13 30 14.2	1.82
16	9 55 4.35	0.351	13 30 39.0	1.80	16 10 16.7	9 55 0.75	0.348	13 30 57.5	1.79
17	9 54 55.98	0.346	13 31 21.9	1.77	17 10 12.6	9 54 52.45	0.343	13 31 40.0	1.76
18	9 54 47.73	0.341	13 32 4.2	1.74	18 10 8.6	9 54 44.27	0.338	13 32 21.8	1.73
19	9 54 39.60	0.336	13 32 45.7	1.71	19 10 4.5	9 54 36.22	0.332	13 33 2.9	1.70
20	9 54 31.60	0.330	13 33 26.5	1.68	20 10 0.4	9 54 28.30	0.327	13 33 43.3	1.67
21	9 54 23.73	0.325	13 34 6.5	1.65	21 9 56.4	9 54 20.51	0.321	13 34 22.9	1.63
22	9 54 16.00	0.319	13 34 45.8	1.62	22 9 52.3	9 54 12.86	0.315	13 35 1.7	1.60
23	9 54 8.40	0.313	13 35 24.3	1.59	23 9 48.3	9 54 5.34	0.310	13 35 39.7	1.57
24	9 54 0.95	0.308	13 36 2.0	1.55	24 9 44.2	9 53 57.97	0.305	13 36 17.0	1.54
25	9 53 53.64	0.302	13 36 38.9	1.52	25 9 40.2	9 53 50.74	0.299	13 36 53.5	1.50
26	9 53 46.48	0.295	13 37 14.9	1.48	26 9 36.1	9 53 43.66	0.292	13 37 29.1	1.46
27	9 53 39.47	0.289	13 37 50.1	1.45	27 9 32.1	9 53 36.73	0.286	13 38 3.8	1.43
28	9 53 32.62	0.283	13 38 24.5	1.42	28 9 28.0	9 53 29.95	0.279	13 38 37.7	1.40
29	9 53 25.92	0.276	13 38 58.0	1.38	29 9 24.0	9 53 23.34	0.272	13 39 10.8	1.36
30	9 53 19.38	0.269	13 39 30.6	1.34	30 9 19.9	9 53 16.88	0.266	13 39 43.0	1.32
31	9 53 13.00	0.262	13 40 2.2	1.30	31 9 15.9	9 53 10.58	0.259	13 40 14.2	1.28
Apr. 1	9 53 6.79	0.255	13 40 33.0	1.26	1 9 11.9	9 53 4.45	0.252	13 40 44.5	1.24
2	9 53 0.75	0.248	13 41 2.8	1.22	2 9 7.8	9 52 58.49	0.245	13 41 13.9	1.21
3	9 52 54.88	0.241	13 41 31.7	1.18	3 9 3.8	9 52 52.70	0.238	13 41 42.4	1.17
4	9 52 49.18	0.234	13 41 59.7	1.15	4 8 59.8	9 52 47.08	0.230	13 42 9.9	1.13
5	9 52 43.66	0.226	13 42 26.7	1.11	5 8 55.8	9 52 41.64	0.223	13 42 36.5	1.08
6	9 52 38.31	0.219	13 42 52.7	1.06	6 8 51.8	9 52 36.38	0.215	13 43 2.0	1.04
7	9 52 33.15	0.211	13 43 17.7	1.02	7 8 47.7	9 52 31.30	0.208	13 43 26.6	1.00
8	9 52 28.17	0 203	13 43 41.7	0.98	8 8 43.7	9 52 26.40	0.200	13 43 50.2	0.96
9	9 52 23.37	0.196	13 44 4.7	0.94	9 8 39.7	9 52 21.68	0.192	13 44 12.8	0.92
10	9 52 18.76	0.188	13 44 26.7	0.90	10 8 35.7	9 52 17.15	0.184	13 44 34.3	0.88
11	9 52 14.34	0.181	13 41 47.7	0.85	11 8 31.7	9 52 12.81	0.177	13 44 54.9	0.83
12	9 52 10.10	0.173	13 45 7.7	0.81	12 8 27.7	9 52 8.65	0.169	13 45 14.4	0.79
13	9 52 6.06	0.165	13 45 26.6	0.77	13 8 23.7	9 52 4.69	0.161	13 45 32.9	0.75
14	9 52 2.21	0.157	13 45 44.5	0.73	14 8 19.7	9 52 0.92	0.153	13 45 50.4	0.71
15	9 51 58.55	0.148	13 46 1.4	0.68	15 8 15.7	9 51 57.34	0.145	13 46 6.9	0.67
16	9 51 55.09	0.140	13 46 17.3	0.64	16 8 11.7	9 51 53.95	0.137	13 46 22.3	0.62
17	9 51 51.82	0.132	13 46 32.1	0.60	17 8 7.7	9 51 50.76	0.129	13 46 36.7	0.58
18	9 51 48.75	0.124	13 46 45.9	0.55	18 8 3.7	9 51 47.76	0.121	13 46 50.1	0.53
19	9 51 45.88	0.115	13 46 58.6	0.51	19 7 59.7	9 51 44.97	0.112	13 47 2.4	0.49
20	9 51 43.21	0.107	13 47 10.2	0.46	20 7 55.8	9 51 42.38	0.104	13 47 13.7	0.45
21	9 51 40.75	0.098	13 47 20.8	0.42	21 7 51.8	9 51 39.98	0.095	13 47 23.9	0.40
22	9 51 38.48	0.090	13 47 30.3	0.37	22 7 47.8	9 51 37.79	0.087	13 47 33.0	0.36
23	9 51 36.42	0.082	13 47 38.7	0.33	23 7 43.9	9 51 35.80	0.078	13 47 41.1	0.31
24	9 51 34.56	0.073	13 47 46.0	0 28	24 7 39.9	9 51 34.01	0.070	13 47 48.1	0.27
25	9 51 32.90	0.064	13 47 52.3	0.24	25 7 35.9	9 51 32.42	0.062	13 47 54.0	0.22
26	9 51 31.45	0.056	13 47 57.5	0.19	26 7 32.0	9 51 31.04	0.054	13 47 58.8	0.18
27	9 51 30.20	0.048	13 48 1.6	0.15	27 7 28.0	9 51 29.86	0.045	13 48 2.5	0.13
28	9 51 29.16	0.039	13 48 4.6	0.10	28 7 24.1	9 51 28.89	0.036	13 48 5.2	0.09
29	9 51 28.33	0.030	13 48 6.6	0.05	29 7 20.1	9 51 28.12	0.028	13 48 6.8	+ 0.04
30	9 51 27.71	0.022	13 48 7.2	+ 0.01	30 7 16.2	9 51 27.56	0.019	13 48 7.2	0.00
31	9 51 27.30	-0.013	+13 48 6.9	- 0.04	31 7 12.2	9 51 27.21	-0.010	+13 48 6.6	- 0.05

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	9 51 27.30	−0.013	+13 48 6.9	− 0.04	1 7 12.2	9 51 27.21	−0.010	+13 48 6.6	− 0.05
2	9 51 27.09	−0.004	13 48 5.5	0.08	2 7 8.3	9 51 27.07	−0.001	13 48 4.9	0.09
3	9 51 27.10	+0.004	13 48 3.0	0.13	3 7 4.4	9 51 27.14	+0.007	13 48 2.1	0.14
4	9 51 27.31	0.013	13 47 59 4	0.17	4 7 0.5	9 51 27.42	0.016	13 47 58.2	0.19
5	9 51 27.74	0.022	13 47 54.7	0.22	5 6 56.5	9 51 27.90	0.025	13 47 53.1	0.23
6	9 51 28.38	0.031	13 47 48.9	0.26	6 6 52.6	9 51 28.60	0.034	13 47 47.0	0.28
7	9 51 29.23	0.040	13 47 42.0	0.31	7 6 48.7	9 51 29.51	0.043	13 47 39.8	0.32
8	9 51 30.29	0.049	13 47 34.0	0.36	8 6 44.8	9 51 30.63	0.051	13 47 31.5	0.37
9	9 51 31.56	0.058	13 47 24.9	0.40	9 6 40.9	9 51 31.95	0.060	13 47 22.1	0.41
10	9 51 33.03	0.065	13 47 14.7	0.45	10 6 37.0	9 51 33.48	0.068	13 47 11.7	0.46
11	9 51 34.72	0.074	13 47 3.4	0.49	11 6 33.1	9 51 35.22	0.076	13 47 0.2	0.50
12	9 51 36.61	0.083	13 46 51.2	0.54	12 6 29.3	9 51 37.16	0.085	13 46 47.6	0.55
13	9 51 38.72	0.092	13 46 37.7	0.58	13 6 25.4	9 51 39.31	0.094	13 46 33.9	0.59
14	9 51 41.03	0.100	13 46 23.2	0.63	14 6 21.5	9 51 41.67	0.102	13 46 19.1	0.64
15	9 51 43.54	0.109	13 46 7.6	0.67	15 6 17.6	9 51 44.23	0.111	13 46 3.3	0.68
16	9 51 46.25	0.117	13 45 50.9	0.71	16 6 13.7	9 51 46.99	0.119	13 45 46.4	0.72
17	9 51 49.17	0 126	13 45 33.2	0.76	17 6 9.9	9 51 49.96	0.128	13 45 28.5	0.77
18	9 51 52.30	0.135	13 45 14.4	0.81	18 6 6.0	9 51 53.13	0.136	13 45 9.5	0.81
19	9 51 55.63	0.143	13 44 54.6	0.85	19 6 2.1	9 51 56 49	0.145	13 44 49.5	0.85
20	9 51 59.16	0.151	13 44 33.7	0.89	20 5 58.2	9 52 0.06	0.153	13 44 28.4	0.90
21	9 52 2.89	0.160	13 44 11.8	0.94	21 5 54.3	9 52 3.83	0.161	13 44 6.2	0.94
22	9 52 6.82	0.168	13 43 48.8	0.98	22 5 50.5	9 52 7.80	0.170	13 43 43.1	0.99
23	9 52 10.95	0.176	13 43 24.8	1.02	23 5 46.6	9 52 11.97	0.178	13 43 18.9	1.03
24	9 52 15.28	0.185	13 42 59.8	1.07	24 5 42.7	9 52 16.34	0.186	13 42 53.6	1.07
25	9 52 19.80	0.192	13 42 33.7	1.11	25 5 38.9	9 52 20.90	0.194	13 42 27.3	1.11
26	9 52 24.53	0.201	13 42 6.6	1.15	26 5 35.0	9 52 25.66	0.202	13 42 0.0	1.16
27	9 52 29.45	0.209	13 41 38.4	1.19	27 5 31.2	9 92 30.61	0.210	13 41 31.7	1.20
28	9 52 34.57	0.217	13 41 9.2	1.24	28 5 27.3	9 52 35.76	0.218	13 41 2.4	1.24
29	9 52 39.89	0.225	13 40 39.0	1.28	29 5 23.4	9 52 41.11	0.227	13 40 32.1	1.28
30	9 52 45.40	0.233	13 40 7.8	1.32	30 5 19.6	9 52 46.65	0.235	13 40 0.7	1.33
31	9 52 51.10	0.241	13 39 35.6	1.36	31 5 15.8	9 52 52.38	0.242	13 39 28.4	1.37
June 1	9 52 56.99	0.249	13 39 2.4	1.40	1 5 11.9	9 52 58.29	0.250	13 38 55.1	1.41
2	9 53 3.07	0.257	13 38 28.2	1.45	2 5 8.1	9 53 4.39	0.258	13 38 20.8	1.45
3	9 53 9.34	0.265	13 37 53.0	1.49	3 5 4.3	9 53 10.68	0.266	13 37 45.5	1.49
4	9 53 15.79	0.275	13 37 16.9	1.53	4 5 0.4	9 53 17.16	0.274	13 37 9.2	1.53
5	9 53 22.43	0.281	13 36 39.8	1.57	5 4 56.6	9 53 23.82	0.281	13 36 32.0	1.57
6	9 53 29.25	0.288	13 36 1.8	1.61	6 4 52.8	9 53 30.66	0.289	13 35 53.9	1.61
7	9 53 36.25	0.296	13 35 22.7	1.65	7 4 49.0	9 53 37.68	0.296	13 35 14.8	1.65
8	9 53 43.43	0.303	13 34 42.8	1.68	8 4 45.2	9 53 44.87	0.304	13 34 34.8	1.69
9	9 53 50.79	0.310	13 34 2.0	1.72	9 4 41.4	9 53 52.25	0.311	13 33 53.9	1.72
10	9 53 58.32	0.317	13 33 20.2	1.76	10 4 37.6	9 53 59.80	0.318	13 33 12.0	1.76
11	9 54 6.03	0.324	13 32 37.5	1.80	11 4 33.8	9 54 7.52	0.325	13 32 29.2	1.80
12	9 54 13.91	0.331	13 31 53.9	1.84	12 4 30.0	9 54 15.41	0.332	13 31 45.6	1.84
13	9 54 21.96	0.338	13 31 9.4	1.88	13 4 26.2	9 54 23.46	0.339	13 31 1.0	1.87
14	9 54 30.17	0.346	13 30 24.0	1.91	14 4 22.4	9 54 31.69	0.346	13 30 15.6	1.91
15	9 54 38.55	0.353	13 29 37.8	1.94	15 4 18.6	9 54 40.08	0.353	13 29 29.4	1.95
16	9 54 47.10	0.359	13 28 50.7	1.98	16 4 14.8	9 54 48.63	0.359	13 28 42.3	1.98
17	9 54 55.81	0.366	13 28 2.7	2.01	17 4 11.0	9 54 57.34	0.366	13 27 54.3	2.02
18	9 55 4.68	0.373	13 27 13.9	2.05	18 4 7.2	9 55 6.22	0.373	13 27 5.5	2.05
19	9 55 13.71	0,379	13 26 24.3	2.09	19 4 3.5	9 55 15.25	0.379	13 26 15.8	2.08
20	9 55 22.90	0.386	13 25 33.9	2.12	20 3 59.7	9 55 24.44	0.386	13 25 25.4	2.12
21	9 55 32.24	0.392	13 24 42.6	2.15	21 3 55.9	9 55 33 79	0.392	13 24 34.1	2.16
22	9 55 41.74	0.399	13 23 50.4	2.19	22 3 52.1	9 55 43.28	0.399	13 23 41.9	2.19
23	9 55 51.39	0.405	13 22 57.5	2.22	23 3 48.4	9 55 52.93	0.405	13 22 49.0	2.22
24	9 56 1.19	0.411	13 22 3.8	2.25	24 3 44.6	9 56 2.73	0.411	13 21 55.3	2.25
25	9 56 11.13	0.418	13 21 9.3	2.29	25 3 40.8	9 56 12.67	0.417	13 21 0.8	2 29
26	9 56 21.22	0.424	13 20 14.0	2.32	26 3 37.1	9 56 22.75	0.423	13 20 5.5	2.32
27	9 56 31.45	0.430	13 19 17.9	2.35	27 3 33.3	9 56 32.98	0.430	13 19 9.5	2.35
28	9 56 41.83	0.435	13 18 21.0	2.38	28 3 29.5	9 56 43.35	0.435	13 18 12.7	2.38
29	9 56 52.35	0.440	13 17 23.4	2.41	29 3 25.8	9 56 53.86	0.440	13 17 15.1	2.41
30	9 57 3.00	0.446	13 16 25.1	2.44	30 3 22.0	9 57 4.51	0.446	13 16 16 9	2.44
31	9 57 13.79	+0.452	+13 15 26.1	− 2.47	31 3 18.3	9 57 15.28	+0.451	+13 15 17.9	− 2.47

Date. 1878.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	9 57 13.79	+0.452	+13 15 26.1	− 2.47	1 3 18.3	9 57 15.28	+0.451	+13 15 17.9	− 2.47
2	9 57 24.71	0.457	13 14 26.4	2.50	2 3 14.5	9 57 26.19	0.457	13 14 18.2	2·49
3	9 57 35.76	0.463	13 13 25.9	2.53	3 3 10.8	9 57 37.23	0.462	13 13 17.9	2.53
4	9 57 46.94	0.468	13 12 24.8	2.56	4 3 7.0	9 57 48.40	0.468	13 12 16.8	2.56
5	9 57 58.24	0.473	13 11 23.0	2.59	5 3 3.3	9 57 59.69	0.473	13 11 15.1	2.58
6	9 58 9.67	0.478	13 10 20.6	2.62	6 2 59.5	9 58 11.10	0.478	13 10 12.7	2.61
7	9 58 21.21	0.483	13 9 17.5	2.64	7 2 55.8	9 58 22.63	0.483	13 9 9.7	2.64
8	9 58 32.88	0.488	13 8 13.7	2.67	8 2 52.0	9 58 34.28	0.487	13 8 6.0	2.67
9	9 58 44.66	0.493	13 7 9.3	2.69	9 2 48.3	9 58 46.04	0.492	13 7 1.8	2.69
10	9 58 56.56	0.498	13 6 4.4	2.72	10 2 44.5	9 58 57.92	0.497	13 5 56.9	2.72
11	9 59 8.56	0.502	13 4 58.8	2.74	11 2 40.8	9 59 9.91	0.502	13 4 51.4	2.74
12	9 59 20.68	0.507	13 3 52.6	2.77	12 2 37.0	9 59 22.01	0.506	13 3 45.4	2.76
13	9 59 32.90	0.511	13 2 45.9	2.79	13 2 33.3	9 59 34.21	0.510	13 2 38.8	2.79
14	9 59 45.22	0.515	13 1 38.6	2.81	14 2 29.6	9 59 46.51	0.514	13 1 31.6	2.81
15	9 59 57.64	0.520	13 0 30.8	2.84	15 2 25.8	9 59 58.90	0.519	13 0 23.8	2.83
16	10 0 10.16	0.524	12 59 22.4	2.86	16 2 22.1	10 0 11.40	0.523	12 59 15.6	2.85
17	10 0 22.77	0.528	12 58 13.4	2.88	17 2 18.5	10 0 23.99	0.527	12 58 6.8	2.88
18	10 0 35.48	0.532	12 57 4.0	2.90	18 2 14.7	10 0 36.68	0.531	12 56 57.4	2.90
19	10 0 48 29	0.535	12 55 54.0	2.93	19 2 11.0	10 0 49.46	0.534	12 55 47.6	2.92
20	10 1 1.18	0.539	12 54 43.5	2.95	20 2 7.3	10 1 2.32	0.538	12 54 37.3	2.94
21	10 1 14.16	0.543	12 53 32.6	-2.97	21 2 3.6	10 1 15.27	0.542	12 53 26.5	2.96
22	10 1 27.22	0.546	12 52 21.2	2.99	22 1 59.9	10 1 28.31	0.545	12 52 15.2	2.98
23	10 1 40.37	0.550	12 51 9.3	3.00	23 1 56.2	10 1 41.43	0.548	12 51 3.5	3.00
24	10 1 53.60	0.553	12 49 57.0	3.02	24 1 52.5	10 1 54.63	0.552	12 49 51.3	3.02
25	10 2 6.90	0.556	12 48 44.3	3.04	25 1 48.7	10 2 7.91	0.555	12 48 38.7	3.03
26	10 2 20.28	0.559	12 47 31.1	3.06	26 1 45.0	10 2 21.26	0.558	12 47 25.7	3.05
27	10 2 33.73	0.562	12 46 17.5	3.08	27 1 41.3	10 2 34.68	0.560	12 46 12.3	3.07
28	10 2 47.26	0.564	12 45 3.5	3.09	28 1 37.6	10 2 48.18	0.563	12 44 58.4	3.08
29	10 3 0.85	0.567	12 43 49.1	3.11	29 1 33.9	10 3 1.74	0.566	12 43 44.2	3.10
30	10 3 14.50	0.569	12 42 34.3	3.12	30 1 30.2	10 3 15.36	0.568	12 42 29.6	3 11
31	10 3 28.22	0.572	12 41 19.2	3.14	31 1 26.5	10 3 29.04	0.571	12 41 14.7	3.13
Aug. 1	10 3 42.00	0.575	12 40 3.8	3.15	1 1 22.8	10 3 42.79	0.573	12 39 59.4	3.14
2	10 3 55.83	0.577	12 38 48.0	3.16	2 1 19.1	10 3 56.59	0.576	12 38 43.9	3.15
3	10 4 9.71	0.579	12 37 32.0	3.17	3 1 15.5	10 4 10.44	0.578	12 37 28.0	3.17
4	10 4 23.64	0.581	12 36 15.6	3.19	4 1 11.8	10 4 24.34	0.580	12 36 11.8	3.18
5	10 4 37.62	0.583	12 34 59.0	3.20	5 1 8.1	10 4 38.29	0.582	12 34 55.4	3.19
6	10 4 51.65	0.585	12 33 42.1	3.21	6 1 4.4	10 4 52.28	0.584	12 33 38.7	3.20
7	10 5 5.72	0.587	12 32 25.0	3.22	7 1 0.7	10 5 6.31	0.585	12 32 21.8	3.21
8	10 5 19.83	0.588	12 31 7.6	3.23	8 0 57.0	10 5 20.38	0.587	12 31 4.6	3.22
9	10 5 33.97	0.589	12 29 50.1	3.24	9 0 53.3	10 5 34.49	0.588	12 29 47.2	3.23
10	10 5 48.15	0.591	12 28 32.3	3.25	10 0 49.6	10 5 48.64	0.589	12 28 29.6	3.24
11	10 6 2.36	0.592	12 27 14.4	3.25	11 0 45.9	10 6 2.81	0.591	12 27 11.9	3.24
12	10 6 16.60	0.593	12 25 56.2	3.26	12 0 42.3	10 6 17.02	0.592	12 25 53.9	3.25
13	10 6 30.87	0.594	12 24 37.9	3.27	13 0 38.6	10 6 31.25	0.593	12 24 35.8	3.26
14	10 6 45.16	0.596	12 23 19.5	3.27	14 0 34.9	10 6 45.50	0.594	12 23 17.6	3.26
15	10 6 59.47	0.597	12 22 0.9	3.28	15 0 31.2	10 6 59.78	0.595	12 21 59.2	3.27
16	10 7 13.80	0.598	12 20 42.2	3.28	16 0 27.5	10 7 14.08	0.596	12 20 40.7	3.27
17	10 7 28.16	0.598	12 19 23.3	3.29	17 0 23.8	10 7 28.39	0.596	12 19 22.0	3.28
18	10 7 42.52	0.598	12 18 4.3	3.29	18 0 20.1	10 7 42.72	0.597	12 18 3.2	3.28
19	10 7 56.90	0.599	12 16 45.3	3.29	19 0 16.4	10 7 57.06	0.597	12 16 44.4	3.28
20	10 8 11.29	0.599	12 15 26.2	2.30	20 0 12.6	10 8 11.41	0.598	12 15 25.5	3.29
21	10 8 25.68	0.600	12 14 7.0	3.30	21 0 8.9	10 8 25.77	0.598	12 14 6.5	3.29
22	10 8 40.08	0.600	12 12 47.8	3.30	22 0 5·2	10 8 40.13	0.598	12 12 47.5	3.29
23	10 8 54.47	0.600	12 11 28.5	3.30	23 0 1.5	10 8 54.49	0.598	12 11 28.4	3.29
					23 23 57.8	10 9 8.85	0.598	12 10 9.4	3.29
24	10 9 8.87	0.600	12 10 9.3	3.30	24 23 54.1	10 9 23.20	0.598	12 8 50.4	3.29
25	10 9 23.26	0.599	12 8 50.0	3.30	25 23 50.4	10 9 37.55	0.597	12 7 31.3	3.29
26	10 9 37.65	0.599	12 7 30.8	3.30	26 23 46.7	10 9 51.89	0.597	12 6 12.3	3.29
27	10 9 52.03	0.598	12 6 11.6	3.30	27 23 43.0	10 10 6.22	0.596	12 4 53.4	3.28
28	10 10 6.39	0.598	12 4 52.4	3.30	28 23 39.3	10 10 20.52	0.596	12 3 34.6	3.28
29	10 10 20.73	0.597	12 3 33.4	3.29	29 23 35.6	10 10 34.81	0.595	12 2 15.8	3.28
30	10 10 35.06	0.596	12 2 14.4	3.29	30 23 31.9	10 10 49.08	0.594	12 0 57.1	3.28
31	10 10 49.36	+0.595	+12 0 55.5	− 3.28	31 23 28.2	10 11 3.33	+0.593	+11 59 38.5	− 3.27

URANUS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	10 11 3.64	+0.594	+11 59 36.8	− 3.28	1 23 24.5	10 11 17.54	+0.591	+11 58 20.1	− 3.27
2	10 11 17.89	0.593	11 58 18.2	3.27	2 23 20.8	10 11 31.73	0.590	11 57 1.9	3.26
3	10 11 32.11	0.592	11 56 59.8	3.27	3 23 17.2	10 11 45.88	0.588	11 55 43.8	3.25
4	10 11 46.30	0.590	11 55 41.5	3.26	4 23 13.5	10 11 59.99	0.587	11 54 25.9	3.25
5	10 12 0.45	0.589	11 54 23.4	3.25	5 23 9.8	10 12 14.07	0.585	11 53 8.1	3.24
6	10 12 14.57	0.587	11 53 5.4	3.24	6 23 6.1	10 12 28.11	0.584	11 51 50.6	3.22
7	10 12 28.64	0.585	11 51 47.7	3.23	7 23 2.4	10 12 42.11	0.582	11 50 33.4	3.21
8	10 12 42.67	0.583	11 50 30.3	3.22	8 22 58.7	10 12 56.06	0.580	11 49 16.4	3.20
9	10 12 56.65	0.581	11 49 13.1	3.21	9 22 55.0	10 13 9.96	0.578	11 47 59.6	3.19
10	10 13 10.59	0.579	11 47 56.1	3.20	10 22 51.3	10 13 23.81	0.575	11 46 43.1	3.18
11	10 13 24.47	0.577	11 46 39.4	3.19	11 22 47.6	10 13 37.60	0.573	11 45 26.8	3.17
12	10 13 38.30	0.575	11 45 23.0	3.18	12 22 43.9	10 13 51.34	0.571	11 44 10.9	3.16
13	10 13 52.07	0.572	11 44 6.9	3.17	13 22 40.2	10 14 5.03	0.568	11 42 55.3	3.15
14	10 14 5.78	0.570	11 42 51.1	3.15	14 22 36.5	10 14 18.65	0.566	11 41 40.0	3.13
15	10 14 19.44	0.567	11 41 35.6	3.14	15 22 32.8	10 14 32.21	0.563	11 40 25.0	3.12
16	10 14 33.04	0.564	11 40 20.5	3.12	16 22 29.1	10 14 45.71	0.561	11 39 10.4	3.10
17	10 14 46.56	0.562	11 39 5.7	3.11	17 22 25.4	10 14 59.13	0.558	11 37 56.2	3.08
18	10 15 0.01	0.559	11 37 51.3	3.09	18 22 21.7	10 15 12.48	0.555	11 36 42.4	3.07
19	10 15 13.39	0.556	11 36 37.3	3.07	19 22 17.9	10 15 25.76	0.552	11 35 28.9	3.05
20	10 15 26.70	0.553	11 35 23.7	3.06	20 22 14.2	10 15 38.97	0.549	11 34 15.9	3.03
21	10 15 39.94	0.550	11 34 10.5	3.04	21 22 10.5	10 15 52.09	0.545	11 33 3.3	3.01
22	10 15 53.09	0.546	11 32 57.8	3.02	22 22 6.8	10 16 5.13	0.542	11 31 51.2	2.99
23	10 16 6.16	0.543	11 31 45.5	3.00	23 22 3.1	10 16 18.09	0.538	11 30 39.5	2.97
24	10 16 19.14	0.539	11 30 33.7	2.98	24 21 59.3	10 16 30.96	0.535	11 29 28.4	2.95
25	10 16 32.03	0.536	11 29 22.4	2.96	25 21 55.6	10 16 43.74	0.531	11 28 17.7	2.93
26	10 16 44.84	0.532	11 28 11.6	2.94	26 21 51.9	10 16 56.42	0.527	11 27 7.6	2.91
27	10 16 57.55	0.528	11 27 1.4	2.92	27 21 48.2	10 17 9.01	0.523	11 25 58.0	2.89
28	10 17 10.16	0.523	11 25 51.7	2.89	28 21 44.4	10 17 21.50	0.518	11 24 49.0	2.86
29	10 17 22.67	0.519	11 24 42.5	2.87	29 21 40.7	10 17 33.89	0.514	11 23 40.5	2.84
30	10 17 35.08	0.515	11 23 33.9	2.85	30 21 37.0	10 17 46.17	0.510	11 22 32.6	2.81
Oct. 1	10 17 47.39	0.510	11 22 25.9	2.82	1 21 33.3	10 17 58.35	0.505	11 21 25.4	2.79
2	10 17 59.58	0.506	11 21 18.5	2.79	2 21 29.5	10 18 10·41	0.500	11 20 18.7	2.76
3	10 18 11.67	0.501	11 20 11.8	2.77	3 21 25.8	10 18 22.36	0.496	11 19 12.7	2.74
4	10 18 23.64	0.497	11 19 5.6	2.74	4 21 22.1	10 18 34.20	0.491	11 18 7.3	2.71
5	10 18 35.50	0.492	11 18 0.1	2.72	5 21 18.3	10 18 45.93	0.486	11 17 2.5	2.68
6	10 18 47.24	0.486	11 16 55.3	2.69	6 21 14.6	10 18 57.53	0.481	11 15 58.5	2.65
7	10 18 58.86	0.481	11 15 51.2	2.66	7 21 10.9	10 19 9.01	0.475	11 14 55.1	2.62
8	10 19 10.35	0.476	11 14 47.7	2.63	8 21 7.1	10 19 20.36	0.470	11 13 52.5	2.60
9	10 19 21.72	0.471	11 13 45.0	2.60	9 21 3.4	10 19 31.59	0.465	11 12 50.5	2.57
10	10 19 32.97	0.465	11 12 42.9	2.57	10 20 59.6	10 19 42.70	0.460	11 11 49.2	2.53
11	10 19 44.09	0.460	11 11 41.6	2.54	11 20 55.9	10 19 53.68	0.454	11 10 48.8	2.50
12	10 19 55.08	0.454	11 10 41.1	2.51	12 20 52.1	10 20 4.52	0.449	11 9 49.1	2.47
13	10 20 5.93	0.449	11 9 41.3	2.48	13 20 48.3	10 20 15.23	0.443	11 8 50.1	2.44
14	10 20 16.65	0.443	11 8 42.3	2.44	14 20 44.6	10 20 25.80	0.437	11 7 52.0	2.41
15	10 20 27.23	0.437	11 7 44.1	2.41	15 20 40.8	10 20 36.23	0.432	11 6 54.6	2.38
16	10 20 37.67	0.432	11 6 46.7	2.38	16 20 37.0	10 20 46.52	0.426	11 5 58.0	2.34
17	10 20 47.97	0.426	11 5 50.1	2.34	17 20 33.3	10 20 56.67	0.420	11 5 2.3	2.30
18	10 20 58.12	0.420	11 4 54.3	2.31	18 20 29.5	10 21 6.67	0.414	11 4 7.4	2.27
19	10 21 8.12	0.414	11 3 59.4	2.27	19 20 25.7	10 21 16.52	0.408	11 3 13.3	2.23
20	10 21 17.98	0.408	11 3 5.3	2.24	20 20 22.0	10 21 26.22	0.401	11 2 20.1	2.20
21	10 21 27.68	0.401	11 2 12.1	2.20	21 20 18.2	10 21 35.76	0.395	11 1 27.8	2.16
22	10 21 37.22	0.395	11 1 19.8	2.16	22 20 14.4	10 21 45.15	0.388	11 0 36.4	2.12
23	10 21 46.61	0.388	11 0 28.4	2.12	23 20 10.6	10 21 54.38	0.381	10 59 45.9	2.08
24	10 21 55.83	0.381	10 59 38.0	2.08	24 20 6.8	10 22 3.44	0.374	10 58 56.4	2.04
25	10 22 4.90	0.374	10 58 48.4	2.04	25 20 3.0	10 22 12.34	0.367	10 58 7.7	2.00
26	10 22 13.80	0.367	10 57 59.8	2.00	26 19 59.3	10 22 21.08	0.360	10 57 20.1	1.96
27	10 22 22.53	0.360	10 57 12.2	1.96	27 19 55.5	10 22 29.65	0.353	10 56 33.4	1.93
28	10 22 31.09	0.353	10 56 25.5	1.92	28 19 51.7	10 22 38.05	0.346	10 55 47.6	1.89
29	10 22 39.49	0.346	10 55 39.8	1.88	29 19 47.9	10 22 46.28	0.339	10 55 2.8	1.84
30	10 22 47.70	0.338	10 54 55.2	1.84	30 19 44.1	10 22 54.34	0.332	10 54 19.1	1.80
31	10 22 55.75	0.331	10 54 11.5	1.80	31 19 40.3	10 23 2.22	0.324	10 53 36.4	1.76
32	10 23 3.62	+0.324	+10 53 28.8	− 1.75	32 19 36.5	10 23 9.92	+0.316	+10 52 54.7	− 1.71

URANUS, 1878.

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	10 23 3.62	+0.324	+10 53 28 8	− 1.75	1 19 36.5	10 23 9 92	+0.316	+10 52 54.7	− 1.71
2	10 23 11.31	0.316	10 52 47.2	1.71	2 19 32.7	10 23 17.44	0.309	10 52 14.1	1.67
3	10 23 18.83	0.309	10 52 6.7	1.67	3 19 28.9	10 23 24.79	0.302	10 51 34.5	1.63
4	10 23 26.16	0.302	10 51 27.2	1.62	4 19 25.0	10 23 31.95	0.295	10 50 56.0	1.58
5	10 23 33.30	0.294	10 50 48.7	1.58	5 19 21.2	10 23 38.93	0.287	10 50 18.5	1.54
6	10 23 40.26	0.286	10 50 11.4	1.53	6 19 17.4	10 23 45.72	0.279	10 49 42.1	1.49
7	10 23 47.04	0.278	10 49 35.1	1.49	7 19 13.6	10 23 52.33	0.272	10 49 6.8	1.45
8	10 23 53.62	0.271	10 48 59.9	1.44	8 19 9.8	10 23 58.75	0.264	10 48 32.6	1.40
9	10 24 0.02	0.263	10 48 25.8	1.40	9 19 6.0	10 24 4.98	0.255	10 47 59.4	1.36
10	10 24 6.23	0.255	10 47 52.8	1.35	10 19 2.2	10 24 11.01	0.247	10 47 27.4	1.31
11	10 24 12.24	0.246	10 47 20.9	1.30	11 18 58.3	10 24 16.85	0.239	10 46 56.5	1.26
12	10 24 18.06	0.238	10 46 50.1	1.26	12 18 54.5	10 24 22.50	0.231	10 46 26.7	1.22
13	10 24 23.68	0.230	10 46 20.5	1.21	13 18 50.7	10 24 27.96	0.223	10 45 58.0	1.17
14	10 24 29.11	0.222	10 45 52.0	1.16	14 18 46.8	10 24 33.22	0.214	10 45 30.5	1.12
15	10 24 34.34	0.213	10 45 24.6	1.11	15 18 43.0	10 24 38.27	0.206	10 45 4.1	1.07
16	10 24 39.36	0.205	10 44 58.4	1.07	16 18 39.1	10 24 43.13	0.198	10 44 38.9	1.03
17	10 24 44.19	0.196	10 44 33.4	1.02	17 18 35.3	10 24 47.79	0.189	10 44 14.8	0.98
18	10 24 48.81	0.188	10 44 9.5	0.97	18 18 31.4	10 24 52.24	0.181	10 43 51.9	0.93
19	10 24 53.23	0.180	10 43 46.8	0.92	19 18 27.6	10 24 56.50	0.173	10 43 30.2	0.88
20	10 24 57.45	0.171	10 43 25.3	0.87	20 18 23.7	10 25 0.54	0.164	10 43 9.7	0.83
21	10 25 1.46	0.163	10 43 5.0	0.82	21 18 19.8	10 25 4.38	0.156	10 42 50.4	0.78
22	10 25 5.26	0.154	10 42 46.0	0.77	22 18 16.0	10 25 8.01	0.147	10 42 32.3	0.73
23	10 25 8.85	0.146	10 42 28.1	0.72	23 18 12.1	10 25 11.44	0.138	10 42 15.4	0.68
24	10 25 12.24	0.136	10 42 11.5	0.67	24 18 8.2	10 25 14.65	0.129	10 41 59.7	0.63
25	10 25 15.41	0.128	10 41 56.1	0.62	25 18 4.3	10 25 17.66	0.121	10 41 45.3	0.57
26	10 25 18.37	0.119	10 41 41.9	0.56	26 18 0.4	10 25 20.45	0.112	10 41 32.1	0.52
27	10 25 21.11	0.110	10 41 29.0	0.51	27 17 56.5	10 25 23.03	0.103	10 41 20.1	0.47
28	10 25 23.65	0.101	10 41 17.2	0.46	28 17 52.7	10 25 25.40	0.094	10 41 9.3	0.42
29	10 25 25.97	0.092	10 41 6.7	0.41	29 17 48.8	10 25 27.55	0.085	10 40 59.7	0.37
30	10 25 28.08	0.083	10 40 57.5	0.36	30 17 44.9	10 25 29.50	0.076	10 40 51.4	0.32
Dec. 1	10 25 29.97	0.074	10 40 49.5	0.31	1 17 41.0	10 25 31.23	0.067	10 40 44.3	0.27
2	10 25 31.65	0.065	10 40 42.7	0.26	2 17 37.1	10 25 32.75	0.059	10 40 38.5	0.22
3	10 25 33.12	0.057	10 40 37.1	0.21	3 17 33.1	10 25 34.06	0.050	10 40 33.8	0.17
4	10 25 34.37	0.048	10 40 32.8	0.16	4 17 29.2	10 25 35.15	0.041	10 40 30.4	0.12
5	10 25 35-41	0.039	10 40 29.7	0.10	5 17 25.3	10 25 36.03	0.033	10 40 28.2	0.07
6	10 25 36.23	0.030	10 40 27.8	− 0.05	6 17 21.4	10 25 36.70	0.024	10 40 27.2	− 0.02
7	10 25 36.84	0.021	10 40 27.1	0.00	7 17 17.5	10 25 37.15	0.015	10 40 27.4	+ 0.03
8	10 25 37.24	0.012	10 40 27.7	+ 0.05	8 17 13.6	10 25 37.39	+0.006	10 40 28.9	0.09
9	10 25 37.42	+0.003	10 40 29.5	0.10	9 17 9.6	10 25 37.42	−0.003	10 40 31.6	0.14
10	10 25 37.39	−0.006	10 40 32.5	0.15	10 17 5.7	10 25 37.24	0.012	10 40 35.5	0.19
11	10 25 37.15	0.015	10 40 36.8	0.20	11 17 1.8	10 25 36.85	0.021	10 40 40.6	0.24
12	10 25 36.69	0.024	10 40 42.3	0.25	12 16 57 8	10 25 36.24	0.030	10 40 46.9	0.29
13	10 25 36.02	0.033	10 40 49.0	0 30	13 16 53.9	10 25 35.42	0.039	10 40 54.5	0.34
14	10 25 35.13	0.042	10 40 57.0	0.35	14 16 49.9	10 25 34.39	0.048	10 41 3.2	0.39
15	10 25 34.04	0.051	10 41 6.1	0.40	15 16 46.0	10 25 33.15	0.056	10 41 13.2	0.44
16	10 25 32.73	0.059	10 41 16.5	0.46	16 16 42.0	10 25 31.70	0.064	10 41 24.4	0.49
17	10 25 31.22	0.067	10 41 28.1	0.51	17 16 38.0	10 25 30.04	0.073	10 41 36.8	0.54
18	10 25 29.49	0.076	10 41 40.9	0.56	18 16 34.1	10 25 28.17	0.082	10 41 50.4	0.59
19	10 25 27.55	0.085	10 41 54.9	0.61	19 16 30.1	10 25 26.10	0.091	10 42 5.2	0.64
20	10 25 25.41	0.093	10 42 10.1	0.66	20 16 26.1	10 25 23.81	0.099	10 42 21.2	0.69
21	10 25 23.05	0.102	10 42 26.5	0.71	21 16 22.1	10 25 21.32	0.108	10 42 38.3	0.73
22	10 25 20.49	0.111	10 42 44.0	0.76	22 16 18.2	10 25 18.63	0.116	10 42 56.5	0.78
23	10 25 17.72	0.119	10 43 2.7	0.80	23 16 14.2	10 25 15.73	0.125	10 43 15.9	0.83
24	10 25 14.75	0.128	10 43 22.5	0.85	24 16 10.2	10 25 12.63	0.133	10 43 36.5	0.88
25	10 25 11.57	0.137	10 43 43.5	0.90	25 16 6.2	10 25 9.33	0.142	10 43 58.3	0.93
26	10 25 8.19	0.145	10 44 5.7	0.95	26 16 2.2	10 25 5.83	0.150	10 44 21.1	0.97
27	10 25 4.62	0.153	10 44 29.0	0.99	27 15 58.2	10 25 2.13	0.159	10 44 45.0	1.02
28	10 25 0.84	0.162	10 44 53.3	1.04	28 15 54.2	10 24 58.23	0.167	10 45 10.1	1.07
29	10 24 56.87	0.170	10 45 18.8	1.09	29 15 50.2	10 24 54.14	0.175	10 45 36.2	1.11
30	10 24 52.70	0.178	10 45 45.4	1.13	30 15 46.2	10 24 49.85	0.183	10 46 3.4	1.16
31	10 24 48.33	0.186	10 46 13.1	1.17	31 15 42.2	10 24 45.38	0.190	10 46 31.7	1.20
32	10 24 43.78	−0.193	+10 46 41.8	+ 1.22	32 15 38.2	10 24 40.72	−0.198	+10 47 1.1	+ 1.25

Date. 1878.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Jan. 0	2 12 36.12	-0.081	+11 26 9.9	- 0.27	0 7 30.4	2 12 35.52	-0.079	+11 26 7.9	- 0.26
1	2 12 34.24	0.076	11 26 3.8	0.24	1 7 26.5	2 12 33.68	0.074	11 26 2.0	0.23
2	2 12 32.49	0.070	11 25 58.4	0.21	2 7 22.6	2 12 31.98	0.068	11 25 56.8	0.20
3	2 12 30.87	0.065	11 25 53.7	0.18	3 7 18.6	2 12 30.41	0.063	11 25 52.4	0.17
4	2 12 29.38	0.059	11 25 49.7	0.15	4 7 14.6	2 12 28.96	0.058	11 25 48.7	0.14
5	2 12 28.02	0.054	11 25 46.4	0.12	5 7 10.7	2 12 27.64	0.053	11 25 45.6	0.12
6	2 12 26.78	0.049	11 25 43.8	0.09	6 7 6.7	2 12 26.44	0.047	11 25 43.2	0.09
7	2 12 25.68	0.043	11 25 41.9	0.07	7 7 2.8	2 12 25.38	0.041	11 25 41.4	0.06
8	2 12 24.72	0.038	11 25 40.6	0.04	8 6 58.8	2 12 24.45	0.036	11 25 40.3	- 0.03
9	2 12 23.88	0.032	11 25 40.1	- 0.01	9 6 54.9	2 12 23.66	0.031	11 25 40.0	0.00
10	2 12 23.18	0.027	11 25 40.3	+ 0.02	10 6 50.9	2 12 23.00	0.025	11 25 40.5	+ 0.03
11	2 12 22.61	0.021	11 25 41.2	0.05	11 6 47.0	2 12 22.47	0.019	11 25 41.6	0.06
12	2 12 22.18	0.015	11 25 42.8	0.08	12 6 43.0	2 12 22.07	0.014	11 25 43.4	0.09
13	2 12 21.87	0.010	11 25 45.1	0.11	13 6 39.1	2 12 21.81	0.008	11 25 45.8	0.12
14	2 12 21.70	-0.005	11 25 48.1	0.14	14 6 35.2	2 12 21.68	-0.003	11 25 49.0	0.15
15	2 12 21.67	+0.001	11 25 51.8	0.17	15 6 31.2	2 12 21.68	+0.003	11 25 52.9	0.18
16	2 12 21.77	0.007	11 25 56.2	0.20	16 6 27.3	2 12 21.82	0.009	11 25 57.5	0.21
17	2 12 22.00	0.013	11 26 1.3	0.23	17 6 23.4	2 12 22.09	0.014	11 26 2.8	0.24
18	2 12 22.37	0.018	11 26 7.2	0.26	18 6 19.4	2 12 22.49	0.019	11 26 8.8	0.27
19	2 12 22.87	0.024	11 26 13.7	0.29	19 6 15.5	2 12 23.02	0.025	11 26 15.5	0.30
20	2 12 23.50	0.030	11 26 20.9	0.31	20 6 11.6	2 12 23.69	0.031	11 26 22.9	0.33
21	2 12 24.27	0.035	11 26 28.8	0.34	21 6 7.7	2 12 24.49	0.036	11 26 31.0	0.35
22	2 12 25.17	0.040	11 26 37.4	0.37	22 6 3.8	2 12 25.42	0.041	11 26 39.7	0.38
23	2 12 26.20	0.046	11 26 46.7	0.40	23 5 59.8	2 12 26.48	0.046	11 26 49.1	0.41
24	2 12 27.37	0.052	11 26 56.7	0.43	24 5 55.9	2 12 27.67	0.052	11 26 59.3	0.44
25	2 12 28.67	0.057	11 27 7.4	0.46	25 5 52.0	2 12 29.00	0.058	11 27 10.1	0.47
26	2 12 30.10	0.062	11 27 18.7	0.49	26 5 48.1	2 12 30.46	0.064	11 27 21.6	0.49
27	2 12 31.67	0.068	11 27 30.7	0.52	27 5 44.2	2 12 32.06	0.069	11 27 33.7	0.52
28	2 12 33.38	0.074	11 27 43.4	0.55	28 5 40.3	2 12 33.80	0.075	11 27 46.6	0.55
29	2 12 35.22	0.080	11 27 56.9	0.58	29 5 36.4	2 12 35.67	0.081	11 28 0.2	0.58
30	2 12 37.18	0.085	11 28 11.1	0.61	30 5 32.5	2 12 37.66	0.086	11 28 14.5	0.61
31	2 12 39.28	0.091	11 28 25.9	0.63	31 5 28.6	2 12 39.78	0.091	11 28 29.4	0.63
Feb. 1	2 12 41.52	0.096	11 28 41.4	0.66	1 5 24.7	2 12 42.04	0.097	11 28 45.0	0.66
2	2 12 43.89	0.101	11 28 57.5	0.69	2 5 20.8	2 12 44.43	0.102	11 29 1.2	0.69
3	2 12 46.38	0.107	11 29 14.3	0.72	3 5 16.9	2 12 46.95	0.108	11 29 18.1	0.72
4	2 12 49.01	0.112	11 29 31.8	0.74	4 5 13.0	2 12 49.60	0.113	11 29 35.7	0.75
5	2 12 51.77	0.118	11 29 49.9	0.77	5 5 9.2	2 12 52.38	0.118	11 29 53.9	0.77
6	2 12 54.66	0.123	11 30 8.6	0.79	6 5 5.3	2 12 55.29	0.124	11 30 12.7	0.80
7	2 12 57.68	0.128	11 30 28.0	0.82	7 5 1.4	2 12 58.33	0.130	11 30 32.2	0.82
8	2 13 0.82	0.133	11 30 48.1	0.85	8 4 57.5	2 13 1.49	0.135	11 30 52.3	0.85
9	2 13 4.08	0.139	11 31 8.8	0.88	9 4 53.7	2 13 4.77	0.139	11 31 13.1	0.88
10	2 13 7.47	0.144	11 31 30.1	0.90	10 4 49.8	2 13 8.18	0.144	11 31 34.5	0.91
11	2 13 10.99	0.149	11 31 52.0	0.93	11 4 45.9	2 13 11.71	0.149	11 31 56.5	0.93
12	2 13 14.63	0.154	11 32 14.5	0.95	12 4 42.0	2 13 15.36	0.155	11 32 19.0	0.95
13	2 13 18.39	0.159	11 32 37.6	0.98	13 4 38.2	2 13 19.13	0.160	11 32 42.1	0.98
14	2 13 22.28	0.165	11 33 1.4	1.00	14 4 34.3	2 13 23.03	0.165	11 33 5.9	1.00
15	2 13 26.29	0.169	11 33 25.7	1.03	15 4 30.4	2 13 27.05	0.170	11 33 30.3	1.03
16	2 13 30.41	0.174	11 33 50.6	1.05	16 4 26.6	2 13 31.18	0.175	11 33 55.2	1.05
17	2 13 34.65	0.179	11 34 16.1	1.07	17 4 22.7	2 13 35.43	0.180	11 34 20.7	1.08
18	2 13 39.00	0.184	11 34 42.1	1.09	18 4 18.8	2 13 39.79	0.184	11 34 46.8	1.10
19	2 13 43.47	0.189	11 35 8.7	1.12	19 4 15.0	2 13 44.27	0.189	11 35 13.5	1.12
20	2 13 48.06	0.194	11 35 35.9	1.14	20 4 11.1	2 13 48.87	0.194	11 35 40.7	1.14
21	2 13 52.76	0.199	11 36 3.6	1.16	21 4 7.3	2 13 53.58	0.198	11 36 8.4	1.16
22	2 13 57.57	0.203	11 36 31.8	1.19	22 3 3.4	2 13 58.39	0.203	11 36 36.6	1.19
23	2 14 2.49	0.208	11 37 0.6	1.21	23 3 59.6	2 14 3.32	0.208	11 37 5.4	1.21
24	2 14 7.53	0.212	11 37 30.0	1.24	24 3 55.7	2 14 8.36	0.213	11 37 34.8	1.24
25	2 14 12.68	0.217	11 37 59.9	1.26	25 3 51.9	2 14 13.52	0.217	11 38 4.8	1.26
26	2 14 17.94	0.221	11 38 30.3	1.28	26 3 48.0	2 14 18.78	0.221	11 38 35.2	1.28
27	2 14 23.30	0.225	11 39 1.2	1.30	27 3 44.2	2 14 24.14	0.226	11 39 6.1	1.30
28	2 14 28.77	0.230	11 39 32.6	1.32	28 3 40.3	2 14 29.61	0.231	11 39 37.4	1.32
29	2 14 34.34	0.234	11 40 4.4	1.34	29 3 36.5	2 14 35.19	0.235	11 40 9.2	1.34
30	2 14 40.02	+0.239	+11 40 36.8	+ 1.36	30 3 32.7	2 14 40.87	+0.239	+11 40 41.6	+ 1.36

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Mar. 1	2 14 34.34	+0.234	+11 40 4.4	+ 1.34	1 3 36.5	2 14 35.19	+0.235	+11 40 9.2	+ 1.34
2	2 14 40.02	0.239	11 40 36.8	1.36	2 3 32.7	2 14 40.87	0.239	11 40 41.6	1.36
3	2 14 45.80	0.243	11 41 9.6	1.38	3 3 28.8	2 14 46.65	0.243	11 41 14.4	1.38
4	2 14 51.68	0.247	11 41 42.9	1.40	4 3 25.0	2 14 52.53	0.247	11 41 47.7	1.40
5	2 14 57.66	0.251	11 42 16.7	1.42	5 3 21.2	2 14 58.51	0.251	11 42 21.5	1.42
6	2 15 3.74	0.255	11 42 50.9	1.43	6 3 17.3	2 15 4.58	0.255	11 42 55.7	1.43
7	2 15 9.91	0.259	11 43 25.6	1.45	7 3 13.5	2 15 10.75	0.259	11 43 30.3	1.45
8	2 15 16.18	0.263	11 44 0.7	1.47	8 3 9.7	2 15 17.01	0.263	11 44 5.3	1.47
9	2 15 22.54	0.267	11 44 36.2	1.49	9 3 5.9	2 15 23.37	0.267	11 44 40.8	1.49
10	2 15 28.99	0.270	11 45 12.1	1.51	10 3 2.0	2 15 29.81	0.270	11 45 16.7	1.50
11	2 15 35.52	0.274	11 45 48.4	1.52	11 2 58.2	2 15 36.34	0.274	11 45 52.9	1.52
12	2 15 42.15	0.278	11 46 25.0	1.54	12 2 54.4	2 15 42.96	0.278	11 46 29.5	1.54
13	2 15 48.86	0.281	11 47 2.0	1.55	13 2 50.6	2 15 49.66	0.281	11 47 6.5	1.55
14	2 15 55.65	0.285	11 47 39.4	1.57	14 2 46.8	2 15 56.44	0.285	11 47 43.8	1.56
15	2 16 2.53	0.288	11 48 17.2	1.58	15 2 42.9	2 16 3.31	0.288	11 48 21.5	1.58
16	2 16 9.49	0.292	11 48 55.3	1.59	16 2 39.1	2 16 10.26	0.291	11 48 59.5	1.59
17	2 16 16.53	0.295	11 49 33.7	1.61	17 2 35.3	2 16 17.29	0.294	11 49 37.9	1.61
18	2 16 23.64	0.298	11 50 12.5	1.63	18 2 31.5	2 16 24.39	0.297	11 50 16.6	1.62
19	2 16 30.83	0.301	11 50 51.7	1.64	19 2 27.7	2 16 31.57	0.301	11 50 55.7	1.64
20	2 16 38.09	0.305	11 51 31.2	1.65	20 2 23.9	2 16 38.82	0.304	11 51 35.1	1.65
21	2 16 45.43	0.307	11 52 10.9	1.66	21 2 20.1	2 16 46.15	0.307	11 52 14.8	1.66
22	2 16 52.84	0.310	11 52 50.9	1.68	22 2 16.3	2 16 53.54	0.309	11 52 54.8	1.67
23	2 17 0.32	0.313	11 53 31.3	1.69	23 2 12.4	2 17 1.00	0.312	11 53 35.0	1.68
24	2 17 7.86	0.315	11 54 11.9	1.70	24 2 8.6	2 17 8.53	0.315	11 54 15.5	1.69
25	2 17 15.47	0.318	11 54 52.8	1.71	25 2 4.8	2 17 16.13	0.318	11 54 56.3	1.71
26	2 17 23.15	0.321	11 55 33.9	1.72	26 2 1.0	2 17 23.80	0.321	11 55 37.4	1.72
27	2 17 30.89	0.324	11 56 15.3	1.73	27 1 57.2	2 17 31.53	0.323	11 56 18.7	1.73
28	2 17 38.69	0.326	11 56 56.9	1.74	28 1 53.4	2 17 39.31	0.325	11 57 0.2	1.73
29	2 17 46.55	0.329	11 57 38.7	1.75	29 1 49.6	2 17 47.15	0.328	11 57 41.9	1.74
30	2 17 54.47	0.331	11 58 20.7	1.76	30 1 45.8	2 17 55.05	0.331	11 58 23.8	1.75
31	2 18 2.44	0.333	11 59 3.0	1.77	31 1 42.0	2 18 3.00	0.333	11 59 6.0	1.76
Apr. 1	2 18 10.46	0.336	11 59 45.5	1.78	1 1 38.2	2 18 11.01	0.335	11 59 48.4	1.77
2	2 18 18.54	0.338	12 0 28.1	1.78	2 1 34.4	2 18 19.07	0.337	12 0 30.9	1.78
3	2 18 26.67	0.340	12 1 10.9	1.79	3 1 30.6	2 18 27.18	0.339	12 1 13.6	1.78
4	2 18 34.85	0.342	12 1 53.9	1.80	4 1 26.8	2 18 35.34	0.341	12 1 56.5	1.79
5	2 18 43.07	0.343	12 2 37.0	1.80	5 1 23.0	2 18 43.54	0.343	12 2 39.5	1.80
6	2 18 51.33	0.345	12 3 20.3	1.81	6 1 19.2	2 18 51.79	0.345	12 3 22.7	1.81
7	2 18 59.64	0.347	12 4 3.7	1.81	7 1 15.4	2 19 0.08	0.346	12 4 6.0	1.81
8	2 19 7.99	0.349	12 4 47.2	1.82	8 1 11.6	2 19 8.41	0.348	12 4 49.4	1.82
9	2 19 16.37	0.350	12 5 30.9	1.82	9 1 7.8	2 19 16.77	0.349	12 5 33.0	1.82
10	2 19 24.79	0.352	12 6 14.7	1.83	10 1 4.1	2 19 25.17	0.351	12 6 16.7	1.82
11	2 19 33.25	0.353	12 6 58.6	1.83	11 1 0.3	2 19 33.60	0.352	12 7 0.4	1.82
12	2 19 41.74	0.354	12 7 42.5	1.83	12 0 56.5	2 19 42.07	0.354	12 7 44.2	1.83
13	2 19 50.26	0.355	12 8 26.5	1.84	13 0 52.7	2 19 50.57	0.355	12 8 28.1	1.83
14	2 19 58.80	0.356	12 9 10.6	1.84	14 0 48.9	2 19 59.09	0.356	12 9 12.1	1.83
15	2 20 7.37	0.358	12 9 54.7	1.84	15 0 45.1	2 20 7.64	0.357	12 9 56.1	1.83
16	2 20 15.97	0.359	12 10 38.8	1.84	16 0 41.3	2 20 16.22	0.358	12 10 40.1	1.84
17	2 20 24.59	0.360	12 11 23.0	1.84	17 0 37.5	2 20 24.82	0.359	12 11 24.2	1.84
18	2 20 33.23	0.360	12 12 7.2	1.84	18 0 33.7	2 20 33.43	0.360	12 12 8.3	1.84
19	2 20 41.89	0.361	12 12 51.5	1.85	19 0 30.0	2 20 42.07	0.360	12 12 52.4	1.84
20	2 20 50.57	0.362	12 13 35.8	1.85	20 0 26.2	2 20 50.73	0.361	12 13 36.6	1.84
21	2 20 59.27	0.363	12 14 20.1	1.85	21 0 22.4	2 20 59.40	0.362	12 14 20.8	1.84
22	2 21 7.98	0.363	12 15 4.3	1.84	22 0 18.6	2 21 8.09	0.362	12 15 4.9	1.84
23	2 21 16.70	0.364	12 15 48.5	1.84	23 0 14.8	2 21 16.79	0.363	12 15 49.0	1.84
24	2 21 25.43	0.364	12 16 32.7	1.84	24 0 11.0	2 21 25.50	0.363	12 16 33.0	1.83
25	2 21 34.17	0.364	12 17 16.8	1.84	25 0 7.2	2 21 34.22	0.363	12 17 17.0	1.83
26	2 21 42.92	0.364	12 18 0.9	1.84	26 0 3.4	2 21 42.94	0.364	12 18 1.0	1.83
					26 23 59.7	2 21 51.67	0.364	12 18 44.9	1.83
27	2 21 51.67	0.365	12 18 44.9	1.83	27 23 55.9	2 22 0.40	0.364	12 19 28.8	1.83
28	2 22 0.43	0.365	12 19 28.9	1.83	28 23 52.1	2 22 9.13	0.364	12 20 12.6	1.82
29	2 22 9.18	0.365	12 20 12.8	1.83	29 23 48.3	2 22 17.86	0.364	12 20 56.3	1.82
30	2 22 17.93	+0.364	+12 20 56.6	+ 1.82	30 23 44.5	2 22 26.58	+0.363	+12 21 39.8	+ 1.82

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
May 1	2 22 26.68	+0.364	+12 21 40.3	+ 1.82	1 23 40.7	2 22 35.30	+0.363	+12 22 23.3	+ 1.81
2	2 22 35.42	0.364	12 22 23.9	1.82	2 23 36.9	2 22 44.02	0.363	12 23 6.7	1.81
3	2 22 44.16	0.364	12 23 7.4	1.81	3 23 33.2	2 22 52.73	0.363	12 23 49.9	1.80
4	2 22 52.89	0.364	12 23 50.7	1.81	4 23 29.4	2 23 1.43	0.362	12 24 33.0	1.79
5	2 23 1.61	0.363	12 24 33.9	1.80	5 23 25.6	2 23 10.11	0.362	12 25 15.9	1.78
6	2 23 10.32	0.363	12 25 16.9	1.79	6 23 21.8	2 23 18.78	0.361	12 25 58.7	1.78
7	2 23 19.01	0.362	12 25 59.8	1.78	7 23 18.0	2 23 27.43	0.360	12 26 41.3	1.77
8	2 23 27.68	0.361	12 26 42.5	1.78	8 23 14.2	2 23 36.06	0.359	12 27 23.7	1.76
9	2 23 36.34	0.360	12 27 25.0	1.77	9 23 10.4	2 23 44.67	0.358	12 28 5.9	1.76
10	2 23 44.97	0 359	12 28 7.4	1.76	10 23 6.6	2 23 53.26	0.357	12 28 48.0	1.75
11	2 23 53.58	0.358	12 28 49.6	1.75	11 23 2.9	2 24 1.82	0.356	12 29 29.9	1.74
12	2 24 2.16	0.357	12 29 31.6	1.74	12 22 59.1	2 24 10.36	0.355	12 30 11.5	1.73
13	2 24 10.72	0.356	12 30 13.3	1.73	13 22 55.3	2 24 18.87	0.354	12 30 52.9	1.72
14	2 24 19.25	0.355	12 30 54.8	1.72	14 22 51.5	2 24 27.35	0.352	12 31 34.1	1.71
15	2 24 27.76	0.354	12 31 36.1	1.71	15 22 47.7	2 24 35.80	0.351	12 32 15.1	1.70
16	2 24 36.23	0.352	12 32 17.2	1.70	16 22 43.9	2 24 44.22	0.350	12 32 55.8	1.69
17	2 24 44.67	0.351	12 32 58.0	1.69	17 22 40.1	2 24 52.60	0.349	12 33 36.3	1.68
18	2 24 53.07	0.349	12 33 38.6	1.68	18 22 36.3	2 25 0.95	0.347	12 34 16.6	1.67
19	2 25 1.44	0.348	12 34 18.9	1.68	19 22 32.5	2 25 9.26	0.345	12 34 56.6	1.66
20	2 25 9.77	0.346	12 34 59.0	1.66	20 22 28.7	2 25 17.53	0.344	12 35 36.3	1.65
21	2 25 18.06	0.344	12 35 38.8	1.65	21 22 24.9	2 25 25.76	0.342	12 36 15.7	1.64
22	2 25 26.31	0.343	12 36 18.3	1.64	22 22 21.2	2 25 33.95	0.340	12 36 54.8	1.62
23	2 25 34.52	0.341	12 36 57.5	1.63	23 22 17.4	2 25 42.09	0.338	12 37 33.6	1.61
24	2 25 42.68	0.339	12 37 36.4	1.62	24 22 13.6	2 25 50.19	0.336	12 38 12.2	1.60
25	2 25 50.79	0.337	12 38 15.0	1.60	25 22 9.8	2 25 58.24	0.334	12 38 50.4	1.59
26	2 25 58.85	0.335	12 38 53.3	1.59	26 22 6.0	2 26 6.24	0.332	12 39 28.3	1.57
27	2 26 6.87	0.333	12 39 31.3	1.58	27 22 2.2	2 26 14.19	0.330	12 40 5.9	1.56
28	2 26 14.84	0.331	12 40 8.9	1.56	28 21 58.4	2 26 22.08	0.328	12 40 43.1	1.54
29	2 26 22.75	0.328	12 40 46.2	1.55	29 21 54.6	2 26 29.92	0.325	12 41 19.9	1.53
30	2 26 30.60	0.326	12 41 23.1	1.53	30 21 50.8	2 26 37.70	0.323	12 41 56.4	1.52
31	2 26 38.39	0.324	12 41 59.6	1.51	31 21 47.0	2 26 45.42	0.320	12 42 32.5	1.50
June 1	2 26 46.13	0.321	12 42 35.8	1.50	1 21 43.2	2 26 53.08	0.318	12 43 8.3	1.48
2	2 26 53.81	0.318	12 43 11.7	1.49	2 21 39.4	2 27 0.68	0.316	12 43 43.7	1.47
3	2 27 1.42	0.316	12 43 47.2	1.47	3 21 35.5	2 27 8.21	0.313	12 44 18.8	1.45
4	2 27 8.97	0.313	12 44 22.3	1.45	4 21 31.7	2 27 15.68	0.310	12 44 53.5	1.43
5	2 27 16.45	0.310	12 44 57.0	1.44	5 21 27.9	2 27 23.08	0.307	12 45 27.7	1.42
6	2 27 23.86	0.308	12 45 31.3	1.42	6 21 24.1	2 27 30 42	0.304	12 46 1.5	1.40
7	2 27 31.21	0.305	12 46 5.1	1.40	7 21 20.3	2 27 37.68	0.301	12 46 34.9	1.38
8	2 27 38.48	0.302	12 46 38.6	1.39	8 21 16.5	2 27 44.87	0.298	12 47 7.9	1.37
9	2 27 45.68	0.298	12 47 11.7	1.37	9 21 12.7	2 27 51.98	0.295	12 47 40.5	1.35
10	2 27 52.80	0.295	12 47 44.3	1.35	10 21 8.9	2 27 59.02	0.292	12 48 12.7	1.33
11	2 27 59.85	0.292	12 48 16.5	1.33	11 21 5.1	2 28 5.98	0.289	12 48 44.4	1.31
12	2 28 6.82	0.289	12 48 48.3	1.31	12 21 1.2	2 28 12.87	0.285	12 49 15.7	1.29
13	2 28 13.72	0.286	12 49 19.6	1.30	13 20 57.4	2 28 19.68	0.282	12 49 46.6	1.27
14	2 28 20.54	0.283	12 49 50.5	1.28	14 20 53.6	2 28 26.41	0.279	12 50 17.0	1.25
15	2 28 27.28	0.279	12 50 20.9	1.26	15 20 49.8	2 28 33.05	0.275	12 50 46.9	1.23
16	2 28 33.93	0.276	12 50 50.8	1.24	16 20 46.0	2 28 39.61	0.272	12 51 16.3	1.22
17	2 28 40.50	0.272	12 51 20.3	1.22	17 20 42.1	2 28 46.09	0.268	12 51 45.3	1.20
18	2 28 46.98	0.268	12 51 49.3	1.20	18 20 38.3	2 28 52.48	0.265	12 52 13.9	1.18
19	2 28 53.38	0.265	12 52 17.9	1.18	19 20 34.5	2 28 58.79	0.261	12 52 42.0	1.16
20	2 28 59.69	0.261	12 52 46.0	1.16	20 20 30.6	2 29 5.01	0.257	12 53 9.5	1.14
21	2 29 5.91	0.257	12 53 13.5	1.14	21 20 26.8	2 29 11.13	0.253	12 53 36.5	1.12
22	2 29 12 03	0.253	12 53 40.5	1.11	22 20 23.0	2 29 17.16	0.249	12 54 3.1	1.10
23	2 29 18.07	0.250	12 54 7 0	1.09	23 20 19.1	2 29 23.11	0.246	12 54 29.2	1.08
24	2 29 24.02	0.246	12 54 33.1	1.07	24 20 15.3	2 29 28.96	0.242	12 54 54.7	1.05
25	2 29 29.87	0.242	12 54 58.6	1.05	25 20 11.5	2 29 34.71	0.238	12 55 19.7	1.03
26	2 29 35.62	0.238	12 55 23.6	1.03	26 20 7.6	2 29 40.37	0.234	12 55 44.2	1.01
27	2 29 41.28	0.234	12 55 48.1	1.01	27 20 3.8	2 29 45.93	0.230	12 56 8.2	0.99
28	2 29 46.84	0.230	12 56 12.1	0.99	28 19 59.9	2 29 51.39	0.225	12 56 31.7	0.97
29	2 29 52.29	0.225	12 56 35.6	0.97	29 19 56.1	2 29 56.74	0.221	12 56 54.7	0.95
30	2 29 57.64	0.221	12 56 58.5	0.94	30 19 52.3	2 30 1.99	0.217	12 57 17.1	0.92
31	2 30 2.89	+0.217	+12 57 20.9	+ 0.92	31 19 48.4	2 30 7.14	+0.213	+12 57 38.9	+ 0.90

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
July 1	2 30 2.89	+0.217	+12 57 20.9	+ 0.92	1 19 48.4	2 30 7.14	+0.213	+12 57 38.9	+ 0.90
2	2 30 8.04	0.213	12 57 42.7	0.90	2 19 44.6	2 30 12.19	0.208	12 58 0.2	0.88
3	2 30 13.08	0.208	12 58 3.9	0.87	3 19 40.7	2 30 17.14	0.204	12 58 20.9	0.85
4	2 30 18.02	0.204	12 58 24.6	0.85	4 19 36.9	2 30 21.97	0.199	12 58 41.0	0.83
5	2 30 22.85	0.199	12 58 44.7	0.83	5 19 33.0	2 30 26.69	0.194	12 59 0.6	0.81
6	2 30 27.56	0.194	12 59 4.2	0.80	6 19 29.2	2 30 31.30	0.190	12 59 19.6	0.78
7	2 30 32.16	0.190	12 59 23.2	0.78	7 19 25.3	2 30 35.81	0.186	12 59 38.1	0.76
8	2 30 36.66	0.185	12 59 41.6	0.76	8 19 21.4	2 30 40.21	0.181	12 59 56.1	0.74
9	2 30 41.05	0.181	12 59 59.5	0.73	9 19 17.6	2 30 44.49	0.176	13 0 13.5	0.71
10	2 30 45.32	0.176	13 0 16.8	0.71	10 19 13.7	2 30 48.66	0.171	13 0 30.2	0.68
11	2 30 49.48	0.171	13 0 33.5	0.68	11 19 9.9	2 30 52.71	0.166	13 0 46.3	0.66
12	2 30 53.52	0.166	13 0 49.5	0.66	12 19 6.0	2 30 56.65	0.162	13 1 1.9	0.64
13	2 30 57.45	0.162	13 1 5.0	0.63	13 19 2.1	2 31 0.48	0.157	13 1 16.9	0.61
14	2 31 1.27	0.157	13 1 19.9	0.61	14 18 58.3	2 31 4.20	0.153	13 1 31.3	0.59
15	2 31 4.97	0.152	13 1 34.2	0.59	15 18 54.4	2 31 7.80	0.148	13 1 45.1	0.57
16	2 31 8.55	0.147	13 1 48.0	0.56	16 18 50.5	2 31 11.28	0.143	13 1 58.3	0.54
17	2 31 12.02	0.142	13 2 1.1	0.53	17 18 46.6	2 31 14.64	0.138	13 2 10.9	0.51
18	2 31 15.36	0.137	13 2 13.6	0.51	18 18 42.8	2 31 17.88	0.133	13 2 23.0	0.49
19	2 31 18.58	0.132	13 2 25.6	0.49	19 18 38.9	2 31 21.00	0.128	13 2 34.4	0.46
20	2 31 21.68	0.127	13 2 36.9	0.46	20 18 35.0	2 31 24.00	0.123	13 2 45.2	0.44
21	2 31 24.67	0 122	13 2 47.6	0.43	21 18 31.1	2 31 26.88	0.118	13 2 55.5	0.42
22	2 31 27.53	0.116	13 2 57.8	0.41	22 18 27.2	2 31 29.64	0.113	13 3 5.2	0.39
23	2 31 30.26	0.112	13 3 7.3	0.38	23 18 23.3	2 31 32.28	0.108	13 3 14.2	0.36
24	2 31 32.88	0.107	13 3 16.2	0.36	24 18 19.4	2 31 34.80	0.102	13 3 22.5	0.34
25	2 31 35.37	0.101	13 3 24.5	0.33	25 18 15.5	2 31 37.19	0.097	13 3 30.2	0.31
26	2 31 37.74	0.096	13 3 32.1	0.31	26 18 11.6	2 31 39.45	0.092	13 3 37.4	0.29
27	2 31 39.98	0.091	13 3 39.1	0.29	27 18 7.7	2 31 41.59	0.087	13 3 44.0	0.27
28	2 31 42.09	0.086	13 3 45.5	0.26	28 18 3.8	2 31 43.61	0.082	13 3 50.0	0.24
29	2 31 44.08	0.081	13 3 51.4	0.23	29 18 0.0	2 31 45.50	0.076	13 3 55.4	0.21
30	2 31 45.95	0.075	13 3 56.6	0.20	30 17 56.1	2 31 47.26	0.070	13 4 0.1	0.18
31	2 31 47.68	0.069	13 4 1.2	0.18	31 17 52.2	2 31 48.89	0.065	13 4 4.2	0.16
Aug. 1	2 31 49.29	0.064	13 4 5.1	0.15	1 17 48.2	2 31 50.39	0.060	13 4 7.6	0.13
2	2 31 50.76	0.059	13 4 8.4	0.12	2 17 44.3	2 31 51.77	0.055	13 4 10.4	0.11
3	2 31 52.11	0.054	13 4 11.0	0.09	3 17 40.4	2 31 53.02	0.049	13 4 12.6	0.08
4	2 31 53.33	0.048	13 4 13.0	0.07	4 17 36.5	2 31 54.14	0.044	13 4 14.1	0.05
5	2 31 54.42	0.043	13 4 14.4	0.05	5 17 32.6	2 31 55.14	0.039	13 4 15.0	+ 0.03
6	2 31 55.39	0.038	13 4 15.2	+ 0.03	6 17 28.7	2 31 56.01	0.034	13 4 15.4	0.00
7	2 31 56.22	0.032	13 4 15.4	0.00	7 17 24.8	2 31 56.74	0.028	13 4 15.2	- 0.03
8	2 31 56.92	0.027	13 4 15.0	- 0.03	8 17 20.8	2 31 57.35	0.023	13 4 14.3	0.05
9	2 31 57.49	0.021	13 4 13.9	0.06	9 17 16.9	2 31 57.83	0.017	13 4 12.8	0.08
10	2 31 57.94	0.016	13 4 12.2	0.08	10 17 13.0	2 31 58.18	0.012	13 4 10.7	0.10
11	2 31 58.26	0.011	13 4 10.0	0.11	11 17 9.0	2 31 58.41	0.007	13 4 8.0	0.13
12	2 31 58.45	+0.006	13 4 7.1	0.13	12 17 5.1	2 31 58.51	+0.002	13 4 4.7	0.15
13	2 31 58.52	0.000	13 4 3.6	0.16	13 17 1.2	2 31 58.49	-0.004	13 4 0.8	0.18
14	2 31 58.46	-0.005	13 3 59.5	0.18	14 16 57.2	2 31 58.34	0.009	13 3 56.2	0.20
15	2 31 58.27	0.011	13 3 54.7	0.21	15 16 53.3	2 31 58.06	0.014	13 3 51.0	0.23
16	2 31 57.95	0.016	13 3 49.4	0.23	16 16 49.4	2 31 57.66	0.019	13 3 45.3	0.25
17	2 31 57.51	0.021	13 3 43.5	0.26	17 16 45.4	2 31 57.12	0.025	13 3 38.9	0.28
18	2 31 56.93	0.027	13 3 36.9	0.29	18 16 41.5	2 31 56.45	0.031	13 3 31.9	0.30
19	2 31 56.22	0.032	13 3 29.7	0.31	19 16 37.5	2 31 55.66	0.036	13 3 24.4	0.33
20	2 31 55.39	0.037	13 3 22.0	0.33	20 16 33.6	2 31 54.75	0.041	13 3 16.3	0.35
21	2 31 54.44	0.042	13 3 13.7	0.36	21 16 29.6	2 31 53.71	0.046	13 3 7.6	0.38
22	2 31 53.36	0.047	13 3 4.8	0.39	22 16 25.7	2 31 52.55	0.051	13 2 58.3	0.40
23	2 31 52.15	0.053	13 2 55.2	0.41	23 16 21.7	2 31 51.26	0.057	13 2 48.4	0.43
24	2 31 50.82	0.058	13 2 45.1	0.43	24 16 17.8	2 31 49.84	0.062	13 2 37.9	0.45
25	2 31 49.36	0.064	13 2 34.4	0.45	25 16 13.8	2 31 48.30	0.067	13 2 26.9	0.47
26	2 31 47.77	0.071	13 2 23.2	0.48	26 16 9.8	2 31 46.63	0.072	13 2 15.2	0.50
27	2 31 46.06	0.074	13 2 11.3	0.51	27 16 5.9	2 31 44.84	0.077	13 2 2.9	0.52
28	2 31 44.23	0.079	13 1 58.8	0.53	28 16 1.9	2 31 42.93	0.082	13 1 50.1	0.54
29	2 31 42.27	0.084	13 1 45.8	0.55	29 15 58.0	2 31 40.90	0.087	13 1 36.8	0.57
30	2 31 40.19	0.089	13 1 32.2	0.58	30 15 54.0	2 31 38.75	0.092	13 1 22.9	0.59
31	2 31 38.00	-0.094	+13 1 18.1	- 0.60	31 15 50 0	2 31 36.48	-0.097	+13 1 8.4	- 0.61

Date. 1878.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Sept. 1	2 31 35.68	−0.099	+13 1 3.4	− 0.63	1 15 46.1	2 31 34.09	−0.102	+13 0 53.4	− 0.64
2	2 31 33.24	0.105	13 0 48.1	0.65	2 15 42.1	2 31 31.58	0.107	13 0 37.8	0.66
3	2 31 30.68	0.109	13 0 32.3	0.67	3 15 38.1	2 31 28.95	0.112	13 0 21.7	0.68
4	2 31 28.01	0.114	13 0 16.0	0.69	4 15 34.1	2 31 26.21	0.116	13 0 5.1	0.70
5	2 31 25.22	0.118	12 59 59.2	0.71	5 15 30.2	2 31 23.36	0.121	12 59 48.0	0.73
6	2 31 22.32	0.123	12 59 41.8	0.74	6 15 26.2	2 31 20.39	0.126	12 59 30.3	0.75
7	2 31 19.30	0.128	12 59 23.8	0.76	7 15 22.2	2 31 17.31	0.131	12 59 12.1	0.77
8	2 31 16.17	0.133	12 59 5.4	0.78	8 15 18.2	2 31 14.12	0.135	12 58 53.4	0.79
9	2 31 12.93	0.137	12 58 46.5	0.80	9 15 14.2	2 31 10.82	0.140	12 58 34.2	0.81
10	2 31 9.58	0.142	12 58 27.1	0.82	10 15 10.2	2 31 7.41	0.144	12 58 14.5	0.83
11	2 31 6.12	0.147	12 58 7.2	0.84	11 15 6.2	2 31 3.89	0.149	12 57 54.4	0.85
12	2 31 2.55	0.151	12 57 46.8	0.86	12 15 2.2	2 31 0.26	0.153	12 57 33.8	0.87
13	2 30 58.88	0.155	12 57 25.9	0.88	13 14 58.2	2 30 56.53	0.158	12 57 12.7	0.89
14	2 30 55.10	0.159	12 57 4.6	0.90	14 14 54.2	2 30 52.70	0.162	12 56 51.2	0.91
15	2 30 51.22	0.164	12 56 42.8	0.92	15 14 50.2	2 30 48.76	0.166	12 56 29.2	0.93
16	2 30 47.23	0.168	12 56 20.6	0.94	16 14 46.2	2 30 44.72	0.170	12 56 6.7	0.95
17	2 30 43.14	0.172	12 55 57.9	0.95	17 14 42.2	2 30 40.58	0.174	12 55 43.8	0.97
18	2 30 38.95	0.177	12 55 34.8	0.97	18 14 38.2	2 30 36 35	0.178	12 55 20.4	0.99
19	2 30 34.67	0.181	12 55 11.2	0.99	19 14 34.2	2 30 32.02	0.182	12 54 56.6	1.00
20	2 30 30.29	0.184	12 54 47.2	1.01	20 14 30.2	2 30 27.60	0.186	12 54 32.4	1.02
21	2 30 25.82	0.188	12 54 22.7	1.03	21 14 26.2	2 30 23.08	0.190	12 54 7.9	1.03
22	2 30 21.25	0.192	12 53 57.9	1.05	22 14 22.2	2 30 18.47	0.194	12 53 42.9	1.05
23	2 30 16.59	0.196	12 53 32.7	1.06	23 14 18.2	2 30 13.77	0.198	12 53 17.5	1.07
24	2 30 11.84	0.200	12 53 7.1	1.07	24 14 14.2	2 30 8.98	0.202	12 52 51.7	1.09
25	2 30 7.00	0.204	12 52 41.1	1.09	25 14 10.2	2 30 4.10	0.205	12 52 25.5	1.10
26	2 30 2.07	0.207	12 52 14.6	1.11	26 14 6.2	2 29 59.13	0.209	12 51 58.9	1.12
27	2 29 57.06	0.211	12 51 47.8	1.12	27 14 2.2	2 29 54.08	0.212	12 51 32.0	1.13
28	2 29 51.96	0.214	12 51 20.7	1.14	28 13 58.1	2 29 48.95	0.215	12 51 4.7	1.15
29	2 29 46.78	0.217	12 50 53.2	1.15	29 13 54.1	2 29 43.74	0.218	12 50 37.1	1.16
30	2 29 41.53	0.220	12 50 25.4	1.16	30 13 50.1	2 29 38.46	0.222	12 50 9.1	1.17
Oct. 1	2 29 36.20	0.224	12 49 57.3	1.18	1 13 46.1	2 29 33.10	0.225	12 49 40.9	1.18
2	2 29 30.79	0.227	12 49 28.8	1.19	2 13 42.1	2 29 27.67	0.228	12 49 12.4	1.20
3	2 29 25.31	0.230	12 49 0.0	1.20	3 13 38.0	2 29 22.16	0.231	12 48 43.5	1.21
4	2 29 19.76	0.233	12 48 31.0	1.21	4 13 34.0	2 29 16.59	0.234	12 48 14.4	1.22
5	2 29 14.15	0.235	12 48 1.7	1.22	5 13 30.0	2 29 10.96	0.236	12 47 45.1	1.23
6	2 29 8.47	0.238	12 47 32.2	1.24	6 13 26.0	2 29 5.26	0.239	12 47 15.5	1.24
7	2 29 2.73	0.241	12 47 2.4	1.25	7 13 21.9	2 28 59.50	0.241	12 46 45.6	1.25
8	2 28 56.93	0.243	12 46 32.3	1.26	8 13 17.9	2 28 53.69	0.243	12 46 15.5	1.26
9	2 28 51.07	0.245	12 46 2.0	1.27	9 13 13.9	2 28 47.82	0.246	12 45 45.2	1.27
10	2 28 45.15	0.247	12 45 31.6	1.28	10 13 9.8	2 28 41.89	0.248	12 45 14.7	1.28
11	2 28 39.18	0.250	12 45 0.9	1.29	11 13 5.8	2 28 35.90	0.251	12 44 44.0	1.29
12	2 28 33.15	0.252	12 44 30.0	1.30	12 13 1.8	2 28 29.86	0.253	12 44 13.1	1.29
13	2 28 27.07	0.254	12 43 58.9	1.30	13 12 57.7	2 28 23.78	0.255	12 43 42.0	1.30
14	2 28 20.95	0.256	12 43 27.6	1.31	14 12 53.7	2 28 17.65	0.257	12 43 10.7	1.31
15	2 28 14.79	0.258	12 42 56.2	1.32	15 12 49.7	2 28 11.47	0.258	12 42 39.3	1.32
16	2 28 8.58	0.260	12 42 24.6	1.32	16 12 45.6	2 28 5.26	0.259	12 42 7.7	1.32
17	2 28 2.33	0.261	12 41 52.8	1.33	17 12 41.6	2 27 59.01	0.261	12 41 35.9	1.33
18	2 27 56.04	0.263	12 41 20.9	1.33	18 12 37.6	2 27 52.72	0.263	12 41 4.0	1.33
19	2 27 49.72	0.264	12 40 48.9	1.34	19 12 33.5	2 27 46.40	0.264	12 40 32.0	1.34
20	2 27 43.36	0.266	12 40 16.8	1.34	20 12 29.5	2 27 40.04	0.266	12 39 59.9	1.34
21	2 27 36.97	0.267	12 39 44.6	1.34	21 12 25.4	2 27 33.65	0.267	12 39 27.8	1.34
22	2 27 30.55	0.268	12 39 12.3	1.35	22 12 21.4	2 27 27.24	0.267	12 38 55.6	1.34
23	2 27 24.11	0.269	12 38 40.0	1.35	23 12 17.4	2 27 20.81	0.268	12 38 23.4	1.34
24	2 27 17.65	0.270	12 38 7.6	1.35	24 12 13.3	2 27 14.35	0.270	12 37 51.1	1.35
25	2 27 11 16	0.271	12 37 35.2	1.35	25 12 9.3	2 27 7.87	0.271	12 37 18.7	1.35
26	2 27 4.65	0.272	12 37 2.7	1.35	26 12 5.2	2 27 1.37	0.271	12 36 46.3	1.35
27	2 26 58.12	0.272	12 36 30.2	1.35	27 12 1.2	2 26 54.85	0.272	12 36 13.9	1.35
28	2 26 51.59	0.273	12 35 57.7	1.35	28 11 57.1	2 26 48.33	0.272	12 35 41.5	1.35
29	2 26 45.05	0.273	12 35 25.2	1.36	29 11 53.1	2 26 41.80	0.272	12 35 9.1	1.35
30	2 26 38.50	0.273	12 34 52.8	1.36	30 11 49.1	2 26 35.27	0.272	12 34 36.8	1.35
31	2 26 31.95	0.273	12 34 20.4	1.36	31 11 45.0	2 26 28.74	0.272	12 34 4.5	1.35
32	2 26 25.39	−0.273	+12 33 48.0	− 1.35	32 11 41.0	2 26 22.20	−0.272	+12 33 32.2	− 1.34

Date.	FOR WASHINGTON MEAN NOON.				FOR MERIDIAN TRANSIT.				
1878.	Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Mean Time of Transit.	Apparent Right Ascension.	Diff. for 1 h. of Long.	Apparent Declination.	Diff. for 1 hour of Long.
	h m s	s	° ′ ″	″	d h m	h m s	s	° ′ ″	″
Nov. 1	2 26 25.39	−0.273	+12 33 48.0	− 1.35	1 11 41.0	2 26 22.20	−0.272	+12 33 32.2	− 1.34
2	2 26 18.84	0.273	12 33 15.7	1.35	2 11 37.0	2 26 15.67	0.272	12 33 0.1	1.34
3	2 26 12.29	0.273	12 32 43.5	1.34	3 11 32.9	2 26 9.14	0.272	12 32 28.1	1.33
4	2 26 5.75	0.272	12 32 11.5	1.34	4 11 28.9	2 26 2.62	0.271	12 31 56.2	1.33
5	2 25 59.21	0.272	12 31 39.5	1.33	5 11 24.8	2 25 56.11	0.271	12 31 24.4	1.32
6	2 25 52.69	0.271	12 31 7.6	1.33	6 11 20.8	2 25 49.61	0.271	12 30 52.7	1.32
7	2 25 46.18	0.270	12 30 35.9	1.32	7 11 16.8	2 25 43.13	0.270	12 30 21.1	1.31
8	2 25 39.69	0.270	12 30 4.3	1.31	8 11 12.7	2 25 36.67	0.269	12 29 49.6	1.31
9	2 25 33.23	0.269	12 29 32.9	1.31	9 11 8.7	2 25 30.23	0.268	12 29 18.3	1.30
10	2 25 26.78	0.268	12 29 1.6	1.30	10 11 4.6	2 25 23.81	0.267	12 28 47.2	1.30
11	2 25 20.35	0.267	12 28 30.5	1.29	11 11 0.6	2 25 17.41	0.266	12 28 16.3	1.29
12	2 25 13.95	0.266	12 27 59.6	1.28	12 10 56.6	2 25 11.04	0.265	12 27 45.6	1.28
13	2 25 7.58	0.265	12 27 28.9	1.28	13 10 52.5	2 25 4.71	0.263	12 27 15.1	1.27
14	2 25 1.25	0.263	12 26 58.4	1.27	14 10 48.5	2 24 58.41	0.262	12 26 44.8	1.26
15	2 24 54.95	0.262	12 26 28.2	1.25	15 10 44.4	2 24 52.14	0.261	12 26 14.7	1.25
16	2 24 48.68	0.261	12 25 58.2	1.24	16 10 40.4	2 24 45.91	0.259	12 25 44.9	1.24
17	2 24 42.45	0.259	12 25 28.4	1.23	17 10 36.4	2 24 39.72	0.257	12 25 15.3	1.22
18	2 24 36.27	0.257	12 24 58.9	1.22	18 10 32.4	2 24 33.57	0.255	12 24 46.1	1.21
19	2 24 30.13	0.255	12 24 29.8	1.21	19 10 28.3	2 24 27.47	0.253	12 24 17.2	1.20
20	2 24 24.04	0.253	12 24 0.9	1.19	20 10 24.3	2 24 21.42	0.251	12 23 48.5	1.19
21	2 24 18.00	0.251	12 23 32.3	1.18	21 10 20.3	2 24 15.42	0.249	12 23 20.1	1.18
22	2 24 12.01	0.248	12 23 4.0	1.17	22 10 16.2	2 24 9.47	0.247	12 22 52.0	1.16
23	2 24 6.08	0.246	12 22 36.1	1.16	23 10 12.2	2 24 3.58	0.244	12 22 24.3	1.15
24	2 24 0.21	0.243	12 22 8.5	1.14	24 10 8.2	2 23 57.75	0.242	12 21 56.9	1.14
25	2 23 54.39	0.241	12 21 41.3	1.13	25 10 4.1	2 23 51.98	0.239	12 21 29.9	1.12
26	2 23 48.63	0.239	12 21 14.4	1.11	26 10 0.1	2 23 46.26	0.237	12 21 3.3	1.10
27	2 23 42.94	0.236	12 20 47.9	1.09	27 9 56.1	2 23 40.61	0.234	12 20 37.1	1.09
28	2 23 37.32	0.233	12 20 21.8	1.08	28 9 52.1	2 23 35.03	0.231	12 20 11.3	1.07
29	2 23 31.77	0.230	12 19 56.1	1.06	29 9 48.0	2 23 29.52	0.228	12 19 45.8	1.05
30	2 23 26.29	0.227	12 19 30.8	1.05	30 9 44.0	2 23 24.09	0.225	12 19 20.7	1.04
Dec. 1	2 23 20.88	0.224	12 19 5.9	1.03	1 9 40.0	2 23 18.73	0.222	12 18 56.1	1.02
2	2 23 15.55	0.220	12 18 41.5	1.01	2 9 36.0	2 23 13.45	0.218	12 18 31.9	1.00
3	2 23 10.31	0.217	12 18 17.5	0.99	3 9 32.0	2 23 8.25	0.215	12 18 8.2	0.98
4	2 23 5.14	0.214	12 17 54.0	0.97	4 9 27.9	2 23 3.13	0.212	12 17 44.9	0.96
5	2 23 0.05	0.210	12 17 30.9	0.95	5 9 23.9	2 22 58.09	0.208	12 17 22.1	0.94
6	2 22 55.05	0.207	12 17 8.3	0.93	6 9 19.9	2 22 53.14	0.205	12 16 59.8	0.92
7	2 22 50.14	0.203	12 16 46.2	0.91	7 9 15.9	2 22 48.27	0.201	12 16 37.9	0.90
8	2 22 45.32	0.199	12 16 24.6	0.89	8 9 11.9	2 22 43.49	0.197	12 16 16.5	0.88
9	2 22 40.58	0.195	12 16 3.5	0.87	9 9 7.9	2 22 38.81	0.193	12 15 55.6	0.86
10	2 22 35.94	0.191	12 15 42.9	0.85	10 9 3.9	2 22 34.22	0.189	12 15 35.3	0.84
11	2 22 31.39	0.188	12 15 22.8	0.83	11 8 59.9	2 22 29.72	0.186	12 15 15.5	0.82
12	2 22 26.94	0.184	12 15 3.2	0.81	12 8 55.9	2 22 25.31	0.182	12 14 56.2	0.80
13	2 22 22.58	0.180	12 14 44.2	0.78	13 8 51.9	2 22 21.00	0.178	12 14 37.4	0.77
14	2 22 18.32	0.175	12 14 25.8	0.76	14 8 47.9	2 22 16.79	0.173	12 14 19.2	0.75
15	2 22 14.16	0.171	12 14 7.9	0.74	15 8 43.9	2 22 12.68	0.169	12 14 1.6	0.72
16	2 22 10.11	0.167	12 13 50.5	0.71	16 8 39.9	2 22 8.68	0.165	12 13 44.5	0.70
17	2 22 6.16	0.163	12 13 33.7	0.69	17 8 35.9	2 22 4.78	0.160	12 13 27.9	0.68
18	2 22 2.31	0.158	12 13 17.5	0.66	18 8 31.9	2 22 0.99	0.156	12 13 11.9	0.65
19	2 21 58.58	0.153	12 13 1.8	0.64	19 8 27.9	2 21 57.30	0.152	12 12 56.5	0.63
20	2 21 54.96	0.149	12 12 46.8	0.61	20 8 23.9	2 21 53.72	0.147	12 12 41.7	0.60
21	2 21 51.44	0.144	12 12 32.4	0.59	21 8 19.9	2 21 50.25	0.142	12 12 27.6	0.58
22	2 21 48.04	0.139	12 12 18.6	0.57	22 8 15.9	2 21 46.90	0.137	12 12 14.1	0.55
23	2 21 44.75	0.134	12 12 5.4	0.54	23 8 11.9	2 21 43.67	0.132	12 12 1.2	0.53
24	2 21 41.59	0.130	12 11 52.8	0.51	24 8 8.0	2 21 40.55	0.128	12 11 48.8	0.50
25	2 21 38.54	0.125	12 11 40.8	0.49	25 8 4.0	2 21 37.54	0.123	12 11 37.0	0.48
26	2 21 35.60	0.120	12 11 29.5	0.46	26 8 0.0	2 21 34.65	0.118	12 11 25.9	0.45
27	2 21 32.78	0.115	12 11 18.8	0.43	27 7 56.0	2 21 31.89	0.112	12 11 15.6	0.42
28	2 21 30.10	0.109	12 11 8.8	0.40	28 7 52.1	2 21 29.25	0.107	12 11 5.7	0.40
29	2 21 27.53	0.105	12 10 59.4	0.38	29 7 48.1	2 21 26.73	0.103	12 10 56.5	0.37
30	2 21 25.09	0.099	12 10 50.6	0.35	30 7 44.1	2 21 24.33	0.097	12 10 48.0	0.34
31	2 21 22.77	0.094	12 10 42.5	0.32	31 7 40.1	2 21 22.06	0.092	12 10 40.2	0.32
32	2 21 20.57	−0.089	+12 10 35.1	− 0.30	32 7 36.2	2 21 19.92	−0.086	+12 10 33.0	− 0.29

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
	″	″	″	″	″	″	s	s	s
Jan. 1	10.92	17.15	8.09	4.12	16.57	4.62	0.29	1.14	0.31
6	12.49	18.42	7.77	4.72	17.79	4.44	0.33	1.21	0.30
11	13.25	19.85	7.46	5.00	19.17	4.27	0.35	1.29	0.29
16	12.72	21.44	7.19	4.80	20.72	4.11	0.34	1.39	0.28
21	11.51	23.21	6.92	4.35	22.42	3.95	0.31	1.50	0.27
26	10.31	25.12	6.68	3.89	24.27	3.81	0.28	1.62	0.26
31	9.33	27.10	6.45	3.52	26.18	3.68	0.25	1.75	0.25
Feb. 5	8.58	29.02	6.24	3.24	28.03	3.56	0.23	1.87	0.24
10	8.00	30.67	6.04	3.02	29.62	3.45	0.22	1.98	0.24
15	7.55	31.81	5.86	2.85	30.74	3.34	0.20	2.05	0.24
20	7.20	32.18	5.68	2.72	31.08	3.24	0.19	2.07	0.23
25	6.93	31.71	5.52	2.61	30.64	3.15	0.18	2.05	0.23
Mar. 2	6.73	30.50	5.36	2.54	29.46	3.06	0.17	1.97	0.22
7	6.58	28.77	5.22	2.48	27.80	2.98	0.17	1.86	0.21
12	6.51	26.80	5.08	2.46	25.89	2.90	0.17	1.74	0.21
17	6.51	24.78	4.95	2.46	23.94	2.83	0.16	1.61	0.20
22	6.61	22.82	4.83	2.50	22.05	2.76	0.17	1.48	0.20
27	6.86	21.04	4.72	2.59	20.33	2.70	0.17	1.37	0.19
April 1	7.32	19.43	4.61	2.77	18.77	2.64	0.19	1.27	0.19
6	8.06	17.99	4.51	3.04	17.37	2.58	0.21	1.18	0.18
11	9.11	16.71	4.42	3.44	16.13	2.53	0.24	1.09	0.18
16	10.45	15.56	4.33	3.94	15.04	2.48	0.28	1.01	0.18
21	12.02	14.57	4.25	4.54	14.07	2.43	0.32	0.94	0.18
26	13.66	13.67	4.17	5.16	13.21	2.38	0.37	0.88	0.17
May 1	15.07	12.87	4.10	5.69	12.45	2.34	0.40	0.83	0.17
6	15.86	12.17	4.03	5.99	11.76	2.30	0.42	0.78	0.17
11	15.81	11.54	3.97	5.97	11.14	2.27	0.41	0.74	0.17
16	15.04	10.97	3.91	5.68	10.59	2.23	0.39	0.71	0.16
21	13.85	10.46	3.86	5.23	10.10	2.20	0.36	0.68	0.16
26	12.53	9.99	3.80	4.73	9.65	2.17	0.32	0.65	0.16
31	11.25	9.57	3.75	4.25	9.25	2.14	0.29	0.62	0.16
June 5	10.10	9.19	3.70	3.81	8.88	2.11	0.26	0.60	0.15
10	9.09	8.84	3.66	3.43	8.54	2.09	0.24	0.58	0.15
15	8.24	8.52	3.62	3.11	8.22	2.07	0.22	0.56	0.15
20	7.56	8.22	3.59	2.85	7.92	2.05	0.20	0.55	0.15
25	7.06	7.95	3.55	2.67	7.65	2.03	0.19	0.54	0.14
30	6.76	7.71	3.52	2.55	7.42	2.01	0.19	0.52	0.14
July 5	6.65	7.49	3.49	2.51	7.22	1.99	0.18	0.51	0.14
10	6.70	7.28	3.47	2.53	7.03	1.98	0.18	0.50	0.14
15	6.89	7.09	3.44	2.60	6.85	1.96	0.19	0.49	0.14
20	7.17	6.91	3.42	2.71	6.68	1.95	0.19	0.48	0.14
25	7.53	6.75	3.40	2.84	6.52	1.94	0.20	0.47	0.13
30	7.98	6.60	3.38	3.01	6.37	1.93	0.21	0.46	0.13
Aug. 4	8.50	6.47	3.37	3.21	6.24	1.92	0.22	0.45	0.13
9	9.14	6.34	3.36	3.45	6.12	1.92	0.23	0.44	0.13
14	9.87	6.21	3.35	3.73	6.00	1.91	0.25	0.43	0.13
19	10.74	6.10	3.34	4.05	5.89	1.91	0.27	0.42	0.13
24	11.74	6.00	3.33	4.43	5.80	1.90	0.30	0.41	0.13
29	12.79	5.91	3.33	4.83	5.71	1.90	0.32	0.40	0.13
Sept. 3	13.67	5.83	3.32	5.16	5.63	1.90	0.34	0.39	0.13
8	13.92	5.75	3.32	5.26	5.55	1.90	0.35	0.38	0.13
13	13.18	5.67	3.32	4.98	5.48	1.90	0.33	0.37	0.13
18	11.66	6.60	3.33	4.40	5.41	1.90	0.30	0.37	0.13
23	9.99	5.54	3.33	3.77	5.35	1.90	0.25	0.36	0.13
28	8.62	5.49	3.34	3.25	5.30	1.91	0.22	0.36	0.13
Oct. 3	7.65	5.45	3.35	2.89	5.26	1.91	0.19	0.35	0.13
8	7.02	5.40	3.36	2.65	5.21	1.92	0.18	0.35	0.13
13	6.61	5.36	3.38	2.50	5.17	1.93	0.17	0.35	0.13
18	6.36	5.32	3.40	2.40	5.14	1.94	0.16	0.34	0.13
23	6.21	5.29	3.42	2.34	5.11	1.95	0.16	0.34	0.13
28	6.15	5.26	3.44	2.32	5.08	1.96	0.16	0.34	0.13

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
	″	″	″	″	″	″	s	s	s
Nov. 2	6.15	5.24	3.46	2.32	5.06	1.97	0.16	0.34	0.13
7	6.21	5.22	3.48	2.35	5.04	1.99	0.17	0.34	0.13
12	6.34	5.20	3.51	2.39	5.02	2.00	0.17	0.35	0.13
17	6.54	5.19	3.54	2.47	5.01	2.02	0.18	0.35	0.14
22	6.82	5.18	3.57	2.58	5.01	2.04	0.19	0.35	0.14
27	7.23	5.17	3.61	2.73	5.00	2.06	0.20	0.35	0.14
Dec. 2	7.80	5.17	3.64	2.94	4.99	2.08	0.22	0.36	0.14
7	8.61	5.17	3.68	3.25	4.99	2.10	0.24	0.36	0.15
12	9.75	5.17	3.72	3.68	5.00	2.12	0.27	0.36	0.15
17	11.24	5.18	3.77	4.24	5.00	2.15	0.31	0.36	0.15
22	12.66	5.19	3.82	4.78	5.01	2.18	0.34	0.37	0.15
27	13.08	5.20	3.87	4.94	5.02	2.21	0.35	0.37	0.16
32	12.22	5.22	3.92	4.61	5.04	2.24	0.33	0.37	0.16

Mean Noon.	♃	♄	⛢	♃	♄	⛢	♃	♄	⛢
	″	″	″	″	″	″	s	s	s
Jan. 1	1.43	0.88	0.50	15.27	7.81	1.90	1.18	0.56	0.13
11	1.43	0.87	0.50	15.29	7.70	1.91	1.18	0.55	0.13
21	1.44	0.86	0.51	15.35	7.61	1.92	1.19	0.55	0.13
31	1.45	0.85	0.51	15.47	7.53	1.93	1.19	0.54	0.13
Feb. 10	1.47	0.84	0.51	15.65	7.47	1.93	1.20	0.53	0.13
20	1.49	0.84	0.51	15.88	7.42	1.93	1.21	0.53	0.13
Mar. 2	1.52	0.84	0.51	16.16	7.39	1.93	1.23	0.53	0.13
12	1.55	0.84	0.51	16.50	7.38	1.92	1.25	0.53	0.13
22	1.58	0.84	0.51	16.89	7.39	1.91	1.28	0.53	0.13
April 1	1.62	0.84	0.50	17.35	7.41	1.90	1.31	0.53	0.13
11	1.67	0.84	0.50	17.85	7.45	1.89	1.35	0.53	0.13
21	1.72	0.85	0.50	18.39	7.51	1.87	1.39	0.54	0.13
May 1	1.78	0.86	0.49	18.90	7.59	1.86	1.43	0.54	0.13
11	1.84	0.87	0.49	19.62	7.68	1.84	1.47	0.55	0.13
21	1.90	0.88	0.48	20.26	7.78	1.82	1.52	0.55	0.12
31	1.96	0.89	0.48	20.89	7.90	1.81	1.56	0.56	0.12
June 10	2.02	0.91	0.47	21.49	8.03	1.79	1.61	0.57	0.12
20	2.08	0.92	0.47	20.03	8.17	1.77	1.65	0.58	0.12
30	2.12	0.94	0.47	22.47	8.31	1.76	1.69	0.59	0.12
July 10	2.15	0.96	0.46	22.79	8.46	1.75	1.72	0.60	0.12
20	2.16	0.97	0.46	22.97	8.60	1.75	1.74	0.61	0.12
30	2.15	0.99	0.46	22.98	8.74	1.74	1.74	0.62	0.12
Aug. 9	2.14	1.00	0.46	22.82	8.87	1.73	1.73	0.63	0.12
19	2.12	1.02	0.46	22.51	8.98	1.73	1.71	0.64	0.12
29	2.08	1.03	0.46	22.08	9.07	1.73	1.68	0.65	0.12
Sept. 8	2.03	1.03	0.46	21.55	9.13	1.74	1.64	0.65	0.12
18	1.97	1.04	0.46	20.96	9.15	1.74	1.60	0.65	0.12
28	1.91	1.03	0.46	20.34	9.15	1.75	1.55	0.65	0.12
Oct. 8	1.85	1.03	0.46	19.71	9.11	1.76	1.50	0.65	0.12
18	1.79	1.02	0.47	19.10	9.05	1.77	1.45	0.65	0.12
28	1.74	1.01	0.47	18.52	8.96	1.78	1.41	0.64	0.12
Nov. 7	1.69	1.00	0.48	17.98	8.85	1.80	1.37	0.63	0.12
17	1.64	0.99	0.48	17.49	8.71	1.82	1.33	0.62	0.12
27	1.60	0.97	0.49	17.05	8.57	1.84	1.29	0.61	0.13
Dec. 7	1.57	0.95	0.49	16.68	8.42	1.85	1.26	0.60	0.13
17	1.54	0.94	0.49	16.36	8.27	1.87	1.23	0.59	0.13
27	1.51	0.92	0.50	16.09	8.13	1.88	1.21	0.58	0.13
37	1.49	0.90	0.50	15.89	8.00	1.90	1.19	0.57	0.13

Horizontal Parallax of Neptune, 0″.30, Jan. 1 to Feb. 4; July 22 to Sept. 25; and after Dec. 4.
" " " 0″.29, Feb. 5 to July 21.
" ' " 0″.31, Sept. 26 to Dec. 4.

SUN'S COORDINATES, 1878.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ=☉'s True Longitude.	λ′	β=☉'s Latitude.	Log. Rad. Vect.=ρ.
Jan. 1.0	+.1914883	4393	−.8847121	7341	−.3839004	8741	281° 13′ 48″.9	38″.4	−0″.98	9.99 26600
1.5	.2000641	0147	.8831165	1390	.3832080	1820	281 44 24.6	14.0	0.95	26613
2.0	.2086246	5749	.8814518	4748	.3824855	4598	282 14 60.3	49.6	0.92	26631
2.5	.2171689	1188	.8797181	7415	.3817330	7075	282 45 36.0	25.2	0.87	26653
3.0	.2256962	6458	.8779156	9395	.3809506	9254	283 16 11.7	0.8	0.82	26679
3.5	.2342058	1551	.8760444	0688	.3801384	1135	283 46 47.4	36.4	0.77	26709
4.0	.2426970	6460	.8741047	1296	.3792964	2718	284 17 23.1	12.0	0.71	26743
4.5	.2511691	1178	.8720966	1220	.3784247	4004	284 47 58.7	47.5	0.65	26781
5.0	.2596214	5697	.8700204	0463	.3775234	4994	285 18 34.2	22.9	0.59	26824
5.5	.2680533	0013	.8678762	9026	.3765927	5690	285 48 69.7	58.3	0.53	26871
6.0	.2764641	4118	.8656642	6911	.3756326	6092	286 19 45.1	33.6	0.46	26923
6.5	.2848531	8005	.8633846	4120	.3746432	6201	286 50 20.4	8.8	0.39	26979
7.0	.2932196	1667	.8610375	0654	.3736245	6017	287 20 55.5	43.8	0.32	27039
7.5	.3015630	5098	.8586232	6516	.3725766	5541	287 51 30.6	18.8	0.26	27104
8.0	.3098825	8291	.8561420	1710	.3714995	4773	288 21 65.6	53.7	0.19	27173
8.5	.3181775	1238	.8535942	6237	.3703935	3716	288 52 40.4	28.4	0.13	27248
9.0	.3264473	3934	.8509799	:0100	.3692588	2372	289 23 15.1	3.0	0.07	27327
9.5	.3346912	6370	.8482993	3299	.3680954	0741	289 53 49.6	37.4	−0.02	27411
10.0	.3429087	8543	.8455528	5840	.3669033	8824	290 24 24.0	11.8	+0.03	27501
10.5	.3510991	0445	.8427407	7724	.3656828	6622	290 54 58.2	45.9	0.07	27597
11.0	.3592618	2070	.8398633	8956	.3644340	4138	291 25 32.2	19.8	0.11	27698
11.5	.3673962	3412	.8369207	9535	.3631570	1371	291 55 66.1	53.6	0.14	27804
12.0	.3755016	4464	.8339131	9464	.3618518	8323	292 26 39.8	27.2	0.16	27916
12.5	.3835775	5221	.8308408	8748	.3605186	4994	292 57 13.2	0.5	0.17	28034
13.0	.3916233	5677	.8277041	7386	.3591575	1387	293 27 46.5	33.7	0.18	28158
13.5	.3996383	5825	.8245032	5383	.3577686	7501	293 58 19.7	6.8	0.18	28288
14.0	.4076220	5661	.8212385	2742	.3563521	3340	294 28 52.7	39.7	0.18	28425
14.5	.4155739	5178	.8179104	9466	.3549080	8902	294 59 25.5	12.4	0.16	28569
15.0	.4234934	4372	.8145192	5560	.3534365	4191	295 29 58.1	45.0	0.14	28719
15.5	.4313801	3237	.8110651	1025	.3519378	9208	296 0 30.5	17.3	0.11	28875
16.0	.4392333	1768	.8075483	5863	.3504120	3954	296 30 62.7	49.4	0.08	29039
16.5	.4470524	:9958	.8039691	:0076	.3488591	8428	297 1 34.7	21.3	+0.04	29210
17.0	.4548368	7801	.8003278	3669	.3472794	2635	297 31 66.6	53.1	−0.01	29387
17.5	.4625860	5292	.7966247	6644	.3456729	6574	298 2 38.3	24.7	0.06	29571
18.0	.4702993	2424	.7928600	9003	.3440397	0246	298 32 69.8	56.1	0.12	29762
18.5	.4779762	9192	.7890340	0749	.3423799	3652	299 3 41.1	27.3	0.18	29959
19.0	.4856161	5590	.7851470	1885	.3406936	6793	299 33 72.3	58.4	0.24	20163
19.5	.4932185	1613	.7811993	2414	.3389809	9670	300 4 43.4	29.5	0.30	20374
20.0	.5007830	7258	.7771911	2338	.3372420	2285	300 35 14.3	0.4	0.37	20592
20.5	.5083090	2517	.7731228	1661	.3354770	4639	301 5 45.0	31.0	0.44	20817
21.0	.5157959	7386	.7689947	:0386	.3336861	6734	301 36 15.6	1.5	0.51	31048
21.5	.5232431	1857	.7648071	8516	.3318694	8570	302 6 46.0	31.8	0.57	31287
22.0	.5306502	5928	.7605604	6055	.3300270	0151	302 37 16.3	2.0	0.63	31532
22.5	.5380166	:9592	.7562549	3006	.3281591	1476	303 7 46.5	32.1	0.68	31783
23.0	.5453417	2843	.7518908	9371	.3262658	2547	303 38 16.6	2.1	0.73	32039
23.5	.5526249	5675	.7474684	5153	.3243471	3364	304 8 46.5	31.9	0.78	32301
24.0	.5598657	8083	.7429879	:0354	.3224032	3930	304 39 16.1	1.4	0.82	32569
24.5	.5670635	0061	.7384497	4979	.3204341	4242	305 9 45.7	30.9	0.85	32843
25.0	.5742177	1604	.7338540	9028	.3184400	4306	305 40 15.2	0.4	0.88	33123
25.5	.5813278	2705	.7292012	2506	.3164211	4121	306 10 44.5	29.6	0.90	33408
26.0	.5883930	3358	.7244918	5418	.3143776	3691	306 40 73.6	58.6	0.91	33697
26.5	.5954130	3558	.7197260	7766	.3123096	3015	307 11 42.5	27.4	0.91	33991
27.0	.6023872	3301	.7149042	9554	.3102173	2097	307 41 71.3	56.1	0.91	34290
27.5	.6093149	2579	.7100268	0786	.3081009	0937	308 12 40.0	24.7	0.90	34594
28.0	.6161956	1387	.7050941	1466	.3059605	9538	308 42 68.4	53.0	0.88	34902
28.5	.6230287	:9719	.7001066	1597	.3037962	7899	309 13 36.6	21.1	0.85	35214
29.0	.6298136	7569	.6950646	1183	.3016083	6025	309 43 64.6	49.0	0.82	35531
29.5	.6365498	4932	.6899685	:0228	.2993968	3914	310 14 32.4	16.8	0.78	35852
30.0	.6432367	1803	.6848187	8737	.2971620	1571	310 44 60.0	44.4	0.74	36176
30.5	.6498739	8176	.6796156	6712	.2949040	8995	311 15 27.3	11.6	0.69	36503
31.0	.6564608	4047	.6743595	4157	.2926230	6190	311 45 54.4	38.6	0.63	36833
31.5	+.6629969	9410	−.6690509	1077	−.2903192	3157	312 16 21.3	5.4	−0.57	37167

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. $0^d.0$.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X'.	Y.	Y'.	Z.	Z'.	λ=☉'s True Longitude.	λ'	β=☉'s Latitude.	Log. Rad. Vect.=ρ.
Feb. 1.0	+.6694817	4260	−.6636903	7478	−.2879928	9898	312° 46′ 48″.0	32″.0	−0″.51	9.99 37505
1.5	.6759147	8592	.6582780	3361	.2856441	6415	313 16 74.4	58.3	0.44	37847
2.0	.6822952	2399	.6528146	8733	.2832732	2711	313 47 40.5	24.3	0.37	38192
2.5	.6886227	5676	.6473005	3598	.2808802	8786	314 17 66.4	50.1	0.30	38539
3.0	.6948967	8418	.6417363	7963	.2784654	4643	314 48 31.9	15.5	0.23	38889
3.5	.7011167	0620	.6361225	1831	.2760291	0285	315 18 57.0	40.6	0.16	39242
4.0	.7072821	2277	.6304595	5207	.2735714	5712	315 49 21.8	5.4	0.10	39599
4.5	.7133924	3382	.6247478	8096	.2710926	0929	316 19 46.3	29.8	−0.04	39959
5.0	.7194473	3934	.6189878	:0502	.2685929	5937	316 49 70.5	53.9	+0.02	40323
5.5	.7254463	3926	.6131799	2429	.2660724	0736	317 20 34.3	17.6	0.08	40690
6.0	.7313891	3357	.6073247	3883	.2635314	5331	317 50 57.7	40.9	0.13	41060
6.5	.7372752	2221	.6014230	4872	.2609702	9724	318 21 20.8	3.9	0.18	41433
7.0	.7431042	0514	.5954748	5395	.2583890	3917	318 51 43.5	26.5	0.22	41810
7.5	.7488756	8231	.5894807	5460	.2557879	7910	319 21 65.7	48.6	0.25	42191
8.0	.7545890	5368	.5834415	5074	.2531673	1709	319 52 27.6	10.5	0.28	42576
8.5	.7602439	1920	.5773574	4239	.2505273	5314	320 22 49.1	32.0	0.30	42964
9.0	.7658400	7885	.5712292	2962	.2478682	8728	320 52 70.1	53.0	0.31	43356
9.5	.7713769	3257	.5650574	1250	.2451901	1952	321 23 30.7	13.5	0.31	43753
10.0	.7768542	8034	.5588424	9106	.2424933	4989	321 53 50.9	33.6	0.30	44154
10.5	.7822716	2211	.5525849	6537	.2397781	7842	322 23 70.7	53.3	0.29	44560
11.0	.7876287	5786	.5462853	3546	.2370447	0513	322 54 30.1	12.6	0.27	44971
11.5	.7929251	8754	.5399441	:0140	.2342933	3004	323 24 49.0	31.4	0.24	45386
12.0	.7981605	1112	.5335619	6323	.2315240	5316	323 54 67.5	49.8	0.21	45806
12.5	.8033345	2856	.5271391	2101	.2287372	7453	324 25 25.6	7.8	0.17	46230
13.0	.8084468	3983	.5206761	7476	.2259330	9416	324 55 43.2	25.4	0.13	46659
13.5	.8134971	4490	.5141734	2455	.2231116	1207	325 25 60.4	42.6	0.08	47094
14.0	.8184852	4376	.5076316	7042	.2202732	2828	325 55 77.2	59.4	+0.03	47533
14.5	.8234107	3635	.5010511	1243	.2174181	4282	326 26 33.6	15.7	−0.03	47978
15.0	.8282732	2265	.4944325	5062	.2145464	5570	326 56 49.6	31.6	0.09	48428
15.5	.8330725	0262	.4877763	8506	.2116584	6695	327 26 65.2	47.1	0.16	48883
16.0	.8378083	7625	.4810828	1576	.2087543	7659	327 57 20.4	2.2	0.22	49343
16.5	.8424802	4349	.4743527	4280	.2058344	8465	328 27 35.2	16.9	0.29	49809
17.0	.8470880	0431	.4675865	6623	.2028987	9113	328 57 49.6	31.2	0.35	50280
17.5	.8516314	5870	.4607847	8610	.1999476	9603	329 27 63.7	45.3	0.41	50757
18.0	.8561100	0661	.4539478	:0246	.1969812	9949	329 57 77.4	59.0	0.47	51239
18.5	.8605234	4800	.4470764	1537	.1939998	:0140	330 28 30.6	12.2	0.53	51725
19.0	.8648712	8283	.4401708	2486	.1910036	0183	330 58 43.4	25.0	0.58	52216
19.5	.8691533	1109	.4332316	3099	.1879928	:0080	331 28 55.9	37.4	0.62	52712
20.0	.8733695	3276	.4262592	3380	.1849675	9832	331 58 68.1	49.5	0.66	53213
20.5	.8775194	4781	.4192542	3335	.1819281	9443	332 29 19.9	1.2	0.70	53718
21.0	.8816025	5618	.4122170	2967	.1788746	8913	332 59 31.2	12.5	0.73	54228
21.5	.8856186	5784	.4051482	2284	.1758075	8247	333 29 42.2	23.4	0.75	54741
22.0	.8895674	5278	.3980483	1289	.1727267	7444	333 59 52.9	34.0	0.77	55259
22.5	.8934487	4097	.3909177	9988	.1696326	6508	334 29 63.2	44.3	0.78	55781
23.0	.8972621	2237	.3837571	8386	.1665255	5442	334 59 73.2	54.3	0.78	56306
23.5	.9010074	:9696	.3765669	6489	.1634055	4247	335 30 22.8	3.9	0.77	56835
24.0	.9046841	6469	.3693478	4302	.1602728	2925	336 0 32.1	13.1	0.76	57367
24.5	.9082921	2555	.3621002	1831	.1571278	1480	336 30 41.0	21.9	0.74	57903
25.0	.9118311	7952	.3548247	9080	.1539707	9913	337 0 49.5	30.3	0.71	58442
25.5	.9153008	2655	.3475218	6056	.1508017	8228	337 30 57.6	38.3	0.67	58983
26.0	.9187008	6661	.3401921	2763	.1476210	6426	338 0 65.4	46.0	0.63	59526
26.5	.9220310	:9969	.3328361	:9207	.1444288	4509	338 30 72.8	53.4	0.58	60072
27.0	.9252909	2575	.3254544	5394	.1412254	2480	339 1 19.9	0.4	0.53	60620
27.5	.9284804	4476	.3180476	1330	.1380111	0342	339 31 26.5	7.0	0.47	61169
28.0	.9315991	5670	.3106163	7021	.1347861	8097	340 1 32.8	13.3	0.41	61720
28.5	.9346468	6154	.3031611	2473	.1315508	5749	340 31 38.7	19.1	0.35	62274
Mar. 1.0	.9376232	5925	.2956825	7691	.1283053	3298	341 1 44.1	24.5	0.28	62829
1.5	.9405284	4982	.2881812	2682	.1250500	0750	341 31 49.1	29.4	0.21	63385
2.0	.9433615	3322	.2806579	7453	.1217851	8106	342 1 53.7	33.9	0.15	63942
2.5	.9461230	0944	.2731131	2009	.1185108	5368	342 31 57.9	38.0	0.08	64501
3.0	+.9488125	7846	−.2655473	6354	−.1152274	2539	343 1 61.6	41.7	−0.01	65061

NOTE.—: denotes a change in the preceding figure.

SUN'S COORDINATES, 1878.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Mar. 3.5	+.9514298	4026	−.2579612	:0497	−.1119353	9623	343° 31′ 64″.8	44″.9	+0″.06	9.99 65621
4.0	.9539746	9481	.2503555	4443	.1086347	6622	344 1 67.6	47.6	0.12	66183
4.5	.9564467	4209	.2427308	8200	.1053258	3538	344 31 69.9	49.8	0.18	66745
5.0	.9588459	8209	.2350876	1771	.1020089	0373	345 1 71.8	51.7	0.23	67308
5.5	.9611721	1478	.2274266	5161	.0986844	7133	345 31 73.2	53.0	0.27	67871
6.0	.9634251	4016	.2197485	8387	.0953525	3819	346 1 74.0	53.8	0.31	68435
6.5	.9656050	5823	.2120540	1445	.0920135	0434	346 31 74.3	54.0	0.34	69001
7.0	.9677116	6897	.2043437	4345	.0886676	6979	347 1 74.1	53.7	0.37	69569
7.5	9697447	7236	.1966182	7093	.0853152	3460	347 31 73.3	52.8	0.39	70138
8.0	.9717042	6838	.1888781	9695	.0819565	9877	348 1 71.9	51.4	0.41	70707
8.5	.9735899	5703	.1811240	2157	.0785918	6235	348 31 70.0	49.5	0.41	71277
9.0	.9754018	3830	.1733565	4484	.0752214	2535	349 1 67.6	47.0	0.41	71849
9.5	.9771400	1220	.1655762	6684	.0718455	8781	349 31 64.6	43.9	0.40	72422
10.0	.9788043	7871	.1577837	8762	.0684643	4974	350 1 61.1	40.4	0.38	72996
10.5	.9803947	3783	.1499796	:0724	.0650780	1116	350 31 57.1	36.3	0.36	73571
11.0	.9819112	8956	.1421645	2575	.0616870	7210	351 1 52.4	31.6	0.33	74149
11.5	.9833538	3390	.1343391	4324	.0582915	3260	351 31 47.2	26.3	0.29	74730
12.0	.9847224	7084	.1265039	5974	.0548918	9267	352 1 41.5	20.5	0.25	75312
12.5	.9860170	0038	.1186595	7532	.0514882	5236	352 31 35.2	14.2	0.20	75895
13.0	.9872375	2252	.1108064	9003	.0480808	1166	353 1 28.3	7.3	0.15	76480
13.5	.9883839	3724	.1029454	:0395	.0446700	7063	353 30 80.9	59.8	0.09	77069
14.0	.9894562	4456	.0950769	1712	.0412560	2927	354 0 73.0	51·8	+0.02	77660
14.5	.9904543	4445	.0872016	2961	.0378391	8763	354 30 64.5	43.3	−0.04	78253
15.0	.9913782	3693	.0793201	4148	.0344195	4571	355 0 55.4	34.2	0.11	78849
15.5	.9922280	2199	.0714329	5278	.0309974	:0355	355 30 45.8	24.5	0.18	79448
16.0	.9930037	:9965	.0635406	6357	.0275731	6116	356 0 35.6	14.3	0.24	80049
16.5	.9937053	6990	.0556437	7390	.0241469	1858	356 30 24.9	3.5	0.30	80652
17.0	.9943327	3273	.0477427	8381	.0207189	7582	356 59 73.6	52.2	0.36	81257
17.5	.9948859	8814	.0398383	9339	.0172893	3291	357 29 61.9	40.4	0.42	81866
18.0	.9953650	3614	.0319311	:0268	.0138584	8986	357 59 49.7	28.1	0.47	82477
18.5	.9957700	7673	.0240216	1175	.0104264	4670	358 29 36.9	15.3	0.52	83091
19.0	.9961008	0990	.0161103	2063	.0069936	:0346	358 59 23.6	2.0	0.57	83708
19.5	.9963575	3566	.0081977	2939	.0035603	6017	359 28 69.8	48.2	0.62	84327
20.0	.9965401	5401	−.0002845	3808	−.0001267	1685	359 58 55.6	33.9	0.66	84948
20.5	.9966485	6494	+.0076287	5323	+.0033070	2648	0 28 40.8	19.0	0.69	85571
21.0	.9966828	6846	.0155417	4452	.0067404	6978	0 58 25.5	3.7	0.71	86197
21.5	.9966430	6457	.0234538	3572	.0101735	1305	1 27 69.9	48.0	0.72	86825
22.0	.9965291	5327	.0313645	2678	.0136059	5625	1 57 53.8	31.9	0.73	87455
22.5	.9963412	3457	.0392731	1763	.0170376	:9938	2 27 37.2	15.2	0.73	88087
23.0	.9960792	0847	.0471792	0823	.0204682	4240	2 56 80.1	58.1	0.72	88721
23.5	.9957432	7496	.0550820	:9850	.9238975	8529	3 26 62.7	40.6	0.70	89356
24.0	.9953332	3406	.0629810	8839	.0273253	2803	3 56 44.8	22.7	0.67	89992
24.5	.9948491	8574	.0708757	7785	.0307512	7058	4 26 26.4	4.2	0.64	90630
25.0	.9942911	3004	.0787654	6682	.0341750	1293	4 55 67.5	45.3	0.60	91268
25.5	.9936590	6692	.0866496	5523	.0375965	5504	5 25 48.3	26.0	0.55	91906
26.0	.9929530	9642	.0945277	4304	.0410153	:9689	5 55 28.6	6.3	0.50	92545
26.5	.9921730	1851	.1023992	3018	.0444312	3844	6 24 68.4	46.0	0.45	93185
27.0	.9913191	3322	.1102634	1660	.0478439	7968	6 54 47.8	25.4	0.39	93825
27.5	.9903913	4053	.1181198	0224	.0512533	2058	7 24 26.8	4.3	0.33	94464
28.0	.9893897	4047	.1259678	8704	.0546591	6113	7 53 65.3	42.8	0.26	95102
28.5	.9883145	3305	.1338067	7093	.0580610	0128	8 23 43.4	20.8	0.19	95740
29.0	.9871657	1827	.1416360	5386	.0614587	4102	8 52 81.1	58.5	0.12	96378
29.5	.9859433	9612	.1494549	3575	.0648518	8029	9 22 58.3	35.6	−0.05	97014
30.0	.9846474	6663	.1572628	1654	.0682402	1910	9 52 35.0	12.3	+0.01	97649
30.5	.9832781	2980	.1650592	:9618	.0716235	5740	10 21 71.2	48.4	0.08	98283
31.0	.9818355	8564	.1728434	7461	.0750016	:9518	10 51 47.0	24.1	0.14	98916
31 5	.9803198	3417	.1806150	5177	.0783741	3240	11 20 82.2	59.2	0.20	99547
Apr. 1.0	.9787311	7540	.1883733	2761	.0817409	6905	11 50 56.9	33.9	0.25	◆00176
1.5	.9770697	0936	.1961177	0205	.0851017	0510	12 20 31.2	8.1	0.30	00804
2.0	.9753358	3607	.2038477	7506	.0884561	4051	12 49 65.0	41.9	0.34	01431
2.5	+.9735295	5554	+.2115625	4654	+.0918039	7526	13 19 38.3	15.1	+0.38	02055

◆ The first figures of this and the following logarithms are 0.00.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Apr. 3.0	+.9716509	6778	+.2192616	1646	+.0951448	0932	13° 48′ 71″.0	47″.8	+0″.41	0.00 02678
3.5	.9697002	7281	.2269443	8474	.0984786	4267	14 18 43.2	19.9	0.43	03299
4.0	.9676776	7065	.2346100	5132	.1018051	7530	14 47 74.9	51.6	0.45	03918
4.5	.9655832	6131	.2422582	1615	.1051238	0714	15 17 46.0	22.6	0.46	04535
5.0	.9634173	4482	.2498882	7916	.1084346	3819	15 46 76.6	53.2	0.46	05151
5.5	.9611801	2120	.2574994	4029	.1117373	6843	16 16 46.7	23.2	0.45	05764
6.0	.9588718	9048	.2650912	:9949	.1150316	:9784	16 45 76.1	52.6	0.44	06375
6.5	.9564927	5267	.2726633	5671	.1183173	2638	17 15 45.0	21.4	0.41	06986
7.0	.9540430	0780	.2802152	1191	.1215941	5404	17 44 73.4	49.7	0.38	07595
7.5	.9515230	5591	.2877462	6502	.1248617	8077	18 14 41.2	17.4	0.35	08202
8.0	.9489330	9701	.2952556	1598	.1281199	0657	18 43 68.4	44.7	0.31	08807
8.5	.9462732	3113	.3027429	6472	.1313685	3140	19 13 35.3	11.4	0.26	09412
9.0	.9435440	5832	.3102075	1120	.1346073	5526	19 42 61.4	37.5	0.20	10015
9.5	.9407456	7859	.3176489	5536	.1378359	7809	20 12 26.8	2.9	0.15	10618
10.0	.9378783	9196	.3250666	:9715	.1410542	:9990	20 41 51.6	27.6	0.09	11220
10.5	.9349425	9848	.3324602	3652	.1442621	2066	21 10 75.9	51.8	+0.03	11822
11.0	.9319384	9818	.3398290	7342	.1474593	4036	21 40 39.7	15.6	—0.04	12423
11.5	.9288660	9104	.3471727	0781	.1506455	5896	22 9 62.9	38.7	0.10	13022
12.0	.9257257	7712	.3544908	3964	.1538205	7644	22 39 25.6	1.4	0.17	13621
12.5	.9225178	5643	.3617826	6884	.1569842	9279	23 8 47.7	23.4	0.23	14219
13.0	.9192426	2902	.3690478	:9538	.1601363	0798	23 37 69.3	45.0	0.30	14817
13.5	.9159004	9490	.3762858	1920	.1632770	2203	24 7 30.3	5.9	0.36	15415
14.0	.9124915	5412	.3834962	4027	.1664055	3486	24 36 50.7	26.3	0.41	16013
14.5	.9090164	0671	.3906785	5852	.1695217	4646	25 5 70.7	46.2	0.46	16611
15.0	.9054754	5272	.3978321	7390	.1726255	5682	25 35 30.2	5.6	0.51	17209
15.5	.9018687	9215	.4049567	8638	.1757168	6593	26 4 49.1	24.5	0.55	17807
16.0	.8981965	2502	.4120518	:9592	.1787952	7376	26 33 67.4	42.8	0.59	18405
16.5	.8944591	5140	.4191169	0245	.1818607	8029	27 3 25.4	0.6	0.62	19003
17.0	.8906567	7127	.4261515	0594	.1849130	8551	27 32 42.9	18.1	0.65	19601
17.5	.8867897	8468	.4331552	0634	.1879520	8939	28 1 59.8	34.9	0.66	20199
18.0	.8828583	9165	.4401275	0360	.1909774	9192	28 31 76.2	51.3	0.67	20797
18.5	.8788628	9220	.4470680	:9768	.1939890	9306	29 0 32.3	7.3	0.67	21394
19.0	.8748034	8637	.4539761	8852	.1969866	9281	29 29 47.9	22.8	0.66	21991
19.5	.8706804	7418	.4608515	7609	.1999701	9115	29 58 63.0	37.8	0.64	22588
20.0	.8664941	5566	.4676937	6034	.2029392	8805	30 27 77.7	52.4	0.62	23184
20.5	.8622449	3085	.4745022	4122	.2058938	8350	30 57 32.0	6.6	0.58	23779
21.0	.8579330	9976	.4812776	1869	.2088335	7746	31 26 45.9	20.4	0.54	24374
21.5	.8535588	6245	.4880163	:9269	.2117582	6992	31 55 59.3	33.8	0.49	24967
22.0	.8491226	1894	.4947209	6319	.2146676	6085	32 24 72.3	46.8	0.44	25559
22.5	.8446246	6924	.5013899	3012	.2175616	5024	32 53 85.0	59.4	0.39	26149
23.0	.8400650	1339	.5080227	:9344	.2204400	3807	33 23 37.3	11.7	0.34	26738
23.5	.8354442	5142	.5146190	5311	.2233025	2431	33 52 49.1	23.4	0.29	27326
24.0	.8307626	8337	.5211782	0907	.2261490	0896	34 21 60.5	34.8	0.23	27912
24.5	.8260206	0927	.5276999	6128	.2289792	9197	34 50 71.6	45.8	0.17	28494
25.0	.8212184	2916	.5341836	0969	.2317929	7334	35 19 82.3	56.4	0.10	29075
25.5	.8163563	4306	.5406288	5425	.2345899	5303	35 49 32.6	6.6	—0.03	29654
26.0	.8114347	5101	.5470350	:9491	.2373701	3105	36 18 42.5	16.5	+0.04	30230
26.5	.8064539	5303	.5534019	3164	.2401331	0734	36 47 52.0	26.0	0.11	30803
27.0	.8014144	4919	.5597288	6437	.2428787	8190	37 16 61.2	35.1	0.17	31372
27.5	.7963165	3951	.5660152	:9305	.2456068	5471	37 45 69.9	43.7	0.23	31938
28.0	.7911606	2403	.5722608	1766	.2483171	2574	38 14 78.2	52.0	0.29	32501
28.5	.7859471	:0279	.5784650	3812	.2510095	:9497	38 43 86.2	59.9	0.34	33060
29.0	.7806763	7582	.5846274	5441	.2536837	6239	39 13 33.8	7.4	0.39	33616
29.5	.7753487	4316	.5907475	6646	.2563395	2797	39 42 40.9	14.4	0.43	34168
30.0	.7699648	:0488	.5968249	7425	.2589767	9169	40 11 47.6	21.0	0.46	34715
30.5	.7645249	6100	.6028590	7770	.2615951	5353	40 40 53.9	27.2	0.49	35258
May 1.0	.7590294	1156	.6088494	7679	.2641945	1347	41 9 59.8	33.1	0.51	35798
1.5	.7534788	5660	.6147956	7146	.2667747	7149	41 38 65.3	38.5	0.52	36333
2.0	.7478734	9617	.6206972	6167	.2693355	2758	42 7 70.3	43.5	0.53	36864
2.5	.7422137	3031	.6265537	4737	.2718768	8171	42 36 74.9	48.0	0.53	37390
3.0	+.7365003	5908	+.6323647	2852	+.2743982	3385	43 5 79.1	54.2	+0.52	37912

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1878.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
May 3.5	+.7307337	8253	+.6381298	0508	+.2768997	8400	43° 34′ 82″.8	55″.8	+0″.50	0.00 38430
4.0	.7249143	:0069	.6438487	7703	.2793811	3213	44 3 86.1	59.0	0.48	38944
4.5	.7190425	1362	.6495209	4430	.2818422	7826	44 33 28.9	1.7	0.44	39453
5.0	.7131189	2137	.6551460	0687	.2842827	2232	45 2 31.3	4.0	0.40	39958
5.5	.7071440	2399	.6607236	6468	.2867026	6432	45 31 33.3	5.9	0.36	40459
6.0	.7011181	2150	.6662532	1770	.2891017	0424	46 0 34.7	7.3	0.31	40956
6.5	.6950418	1398	.6717346	6590	.2914798	4205	46 29 35.7	8.2	0.25	41449
7.0	.6889156	:0146	.6771673	0923	.2938368	7776	46 58 36.3	8.7	0.19	41938
7.5	.6827402	8403	.6825510	4766	.2961725	1134	47 27 36.3	8.7	0.13	42423
8.0	.6765160	6171	.6878852	8114	.2984868	4278	47 56 35.8	8.1	0.07	42905
8.5	.6702436	3458	.6931698	0966	.3007796	7207	48 25 34.9	7.1	+0.01	43384
9.0	.6639236	:0268	.6984044	3318	.3030506	:9918	48 54 33.6	5.7	−0.05	43859
9.5	.6575562	6605	.7035886	5166	.3052997	2410	49 23 31.8	3.8	0.11	44330
10.0	.6511418	2471	.7087222	6509	.3075268	4683	49 52 29.4	1.3	0.18	44799
10.5	.6446810	7874	.7138047	7340	.3097318	6734	50 20 86.7	58.5	0.24	45265
11.0	.6381742	2816	.7188359	7659	.3119146	8563	50 49 83.6	55.4	0.30	45728
11.5	.6316220	7305	.7238154	7460	.3140750	0168	51 18 80.0	51.7	0.35	46188
12.0	.6250250	1345	.7287430	6743	.2162128	1549	51 47 75.9	47.6	0.40	46645
12.5	.6183837	4943	.7336184	5503	.3183282	2703	52 16 71.5	43.1	0.45	47101
13.0	.6116985	8101	.7384414	3740	.3204207	3630	52 45 66.6	38.1	0.49	47554
13.5	.6049700	:0826	.7432116	1449	.3224904	4329	53 14 61.3	32.7	0.52	48004
14.0	.5981986	3122	.7479289	8629	.3245371	4798	53 43 55.5	26.8	0.54	48452
14.5	.5913848	4995	.7525928	5275	.3265607	5033	54 12 49.4	20.6	0.55	48898
15.0	.5845289	6446	.7572031	1385	.3285611	5041	54 41 42.9	14.0	0.56	49342
15.5	.5776313	7480	.7617595	6956	.3305382	4814	55 10 36.1	7.1	0.56	49783
16.0	.5706927	8104	.7662616	1985	.3324918	4352	55 38 88.9	59.9	0.56	50222
16.5	.5637135	8323	.7707092	6467	.3344217	3653	56 7 81.4	52.3	0.55	50659
17.0	.5566943	8141	.7751020	0404	.3363279	2717	56 36 73.5	44.4	0.53	51093
17.5	.5496355	7563	.7794398	3789	.3382103	1543	57 5 65.2	36.0	0.50	51525
18.0	.5425376	6594	.7837223	6622	.3400687	0130	57 34 56.6	27.3	0.47	51955
18.5	.5354012	5240	.7879492	8897	.3419030	8475	58 3 47.8	18.4	0 43	52383
19 0	.5282269	3507	.7921203	0617	.3437132	6579	58 32 38.6	9.1	0.38	52808
19.5	.5210149	1397	.7962353	1775	.3454990	4439	59 0 89.1	59.5	0.33	53231
20.0	.5137655	8913	.8002940	2370	.3472603	2055	59 29 79.4	49.7	0.27	53652
20.5	.5064793	6061	.8042961	2399	.3489970	9424	59 58 69.5	39.7	0.21	54069
21.0	.4991568	2846	.8082413	1859	.3507090	6547	60 27 59.2	29.3	0.15	54483
21.5	.4917985	9273	.8121291	0745	.3523962	3422	60 56 48.6	18.6	0.09	54894
22.0	.4844050	5347	.8159593	9056	.3540584	0047	61 25 37.8	7.7	−0.02	55301
22.5	.4769767	:1074	.8197316	6787	.3556955	6420	61 53 86.7	56.5	+0.04	55705
23.0	.4695141	6458	.8234457	3937	.3573074	2542	62 22 75.4	45.1	0.11	56105
23.5	.4620178	1505	.8271013	0502	.3588940	8411	62 51 63.9	33.5	0.18	56502
24.0	.4544883	6219	.8306982	6480	.3604551	4025	63 20 52.1	21.6	0.25	56894
24.5	.4469261	:0607	.8342362	1869	.3619906	9383	63 49 40.1	9.5	0.31	57281
25.0	.4393317	4672	.8377150	6666	.3635004	4484	64 17 87.9	57.3	0.36	57664
25.5	.4317058	8423	.8411342	0867	.3649843	9326	64 46 75.5	44.8	0.41	58043
26.0	.4240488	1862	.8444937	4471	.3664422	3908	65 15 62.8	32.0	0.46	58417
26.5	.4163613	4997	.8477932	7475	.3678741	8230	65 44 49.9	19.0	0.50	58785
27.0	.4086437	7830	.8510324	:9876	.3692798	2290	66 13 36.8	5.8	0.54	59149
27.5	.4008966	:0368	.8542111	1672	.3706592	6087	66 41 83.5	52.4	0.57	59508
28.0	.3931207	2618	.8573291	2862	.3720121	:9620	67 10 70.0	38.8	0.59	59861
28.5	.3853165	4585	.8603861	3441	.3733386	2888	67 39 56.2	24.9	0.60	60208
29.0	.3774846	6275	.8633819	3409	.3746385	5891	68 8 42.2	10.8	0.61	60550
29.5	.3696256	7693	.8663162	2761	.3759116	8625	68 36 88.0	56.5	0.61	60887
30.0	.3617402	8849	.8691887	1496	.3771579	1092	69 5 73.5	42.0	0.61	61218
30.5	.3538290	9746	.8719991	9610	.3783773	3289	69 34 58.7	27.1	0.59	61542
31.0	.3458926	:0391	.8747472	7101	.3795697	5217	70 3 43.7	12.0	0.57	61861
31.5	.3379315	:0789	.8774330	3969	.3807350	6874	70 31 88.5	56.7	0.54	62174
June 1.0	.3299464	:0946	.8800564	0213	.3818731	8259	71 0 73.0	41.1	0.51	62481
1.5	.3219378	:0869	.8826170	5829	.3829839	9371	71 29 57.2	25.2	0.46	62782
2.0	.3139063	:0562	.8851148	0817	.3840674	0210	71 58 41.2	9.1	0.41	63077
2.5	+.3058527	:0034	+.8875495	5174	+.3851235	0775	72 26 84.9	52.7	+0.36	63365

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0d.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X'.	Y.	Y'.	Z.	Z'.	λ=☉'s True Longitude.	λ'	β=☉'s Latitude.	Log. Rad. Vect.=ρ.
June 3.0	+.2977775	9290	+.8899210	8900	+.3861522	1066	72° 55′ 68″.4	36″.1	+0″.30	0.00 63647
3.5	.2896813	8337	.8922291	1991	.3871534	1082	73 24 51.6	19.2	0.24	63924
4.0	.2815649	7181	.8944736	4447	.3881270	0822	73 53 34.6	2.2	0.18	64195
4.5	.2734288	5828	.8966544	6266	.3890730	0286	74 21 77.2	44.7	0.12	64460
5.0	.2652737	4285	.8987715	7448	.3899913	9474	74 50 59.4	26.8	+0.05	64720
5.5	.2571001	2557	.9008247	7991	.3908818	8383	75 19 41.4	8.7	−0.02	64975
6.0	.2489086	:0650	.9028139	7894	.3917445	7015	75 47 83.2	50.4	0.08	65224
6.5	.2406999	8571	.9047391	7157	.3925795	5369	76 16 64.7	31.8	0.14	65468
7.0	.2324745	6325	.9066009	5780	.3933867	3446	76 45 45.9	12.9	0.20	65707
7.5	.2342330	3918	.9083973	3761	.3941661	1244	77 13 86.8	53.8	0,25	65943
8.0	.2159760	:1355	.9101301	1101	.3949176	8764	77 42 67.6	34.4	0,30	66173
8.5	.2077042	8645	.9117985	7796	.3956412	6005	78 11 48.1	14.8	0,35	66398
9.0	.1994180	5790	.9134025	3848	.3963369	2967	78 39 88.3	54.9	0.39	66619
9.5	.1911182	2799	.9149420	9254	.3970048	:9651	79 8 68.2	34.7	0.43	66836
10.0	.1828052	9676	.9164169	4015	.3976446	6054	79 37 47.9	14.3	0,46	67049
10.5	.1744796	6427	.9178273	8131	.3982565	2178	80 5 87.4	53.7	0,48	67258
11.0	.1661420	3058	.9191731	1601	.3988403	8021	80 34 66.7	32.9	0,49	67463
11.5	.1577929	9574	.9204542	4424	.3993961	3584	81 3 45.8	11.9	0,49	67665
12.0	.1494329	5981	.9216705	6599	.3999239	8867	81 31 84.6	50.6	0,49	67863
12.5	.1410626	2285	.9228220	8126	.4004235	3868	82 0 63.3	29.2	0,48	68057
13.0	.1326825	8490	.9239086	9004	.4008951	8589	82 29 41.8	7.6	0,46	68247
13.5	.1242933	4605	.9249303	9233	.4013385	3028	82 57 80.1	45.8	0,43	68435
14.0	.1158956	:0634	.9258869	8811	.4017537	7185	83 26 58.2	23.9	0,39	68619
14.5	.1074899	6583	.9267785	7739	.4021408	1061	83 55 36.1	1.7	0.36	68798
15.0	.0990767	2457	.9276050	6017	.4024997	4656	84 23 73.9	39.4	0,32	68974
15.5	.0906566	8262	.9283664	3643	.4028304	7968	84 52 51.6	17.0	0,27	69147
16.0	.0822301	4003	.9290628	0620	.4031329	0999	85 20 89.1	54.4	0,22	69316
16.5	.0737978	9686	.9296941	6946	.4034071	3746	85 49 66.5	31.7	0.16	69483
17.0	.0653602	5315	.9302603	2620	.4036531	6212	86 18 43.8	8.9	0.10	69647
17.5	.0569179	:0898	.9307613	7643	.4038708	8394	86 46 81.1	46.1	−0,03	69806
18.0	.0484714	6438	.9311971	2014	.4040602	0294	87 15 58.3	23.2	+0.04	69961
18.5	.0400212	1942	.9315676	5732	.4042213	1911	87 44 35.4	0.2	0.11	70113
19.0	.0315677	7412	.9318727	8797	.4043540	3244	88 12 72.4	37 2	0.18	70261
19.5	.0231116	2856	.9321124	1207	.4044583	4293	88 41 49.3	14.0	0.25	70405
20.0	.0146535	8280	.9322866	2962	.4045342	5057	89 9 86.2	50.8	0,31	70545
20.5	+.0061939	3689	.9323952	4061	.4045816	5537	89 38 63.1	27.6	0.37	70681
21.0	−.0022665	0910	.9324382	4505	.4046005	5732	90 7 40.0	4.4	0.43	70812
21.5	.0107271	5511	.9324155	4291	.4045909	5642	90 35 76.9	41.2	0.49	70937
22.0	.0191875	0111	.9323272	3422	.4045528	5267	91 4 53.7	17.9	0.55	71058
22.5	.0276469	4701	.9321732	1895	.4044862	4607	91 32 90.5	54.6	0.59	71175
23.0	.0361046	:9274	.9319535	9712	.4043911	3662	92 1 67.4	31.4	0.63	71286
23.5	.0445600	3824	.9316681	6871	.4042675	2432	92 30 44.2	8.1	0.66	71391
24.0	.0530127	:8347	.9313170	3374	.4041152	0915	92 58 81.0	44.9	0.69	71491
24.5	.0614620	2836	.9309002	9220	.4039344	9113	93 27 57.8	21.6	0.70	71585
25.0	.0699073	7285	.9304176	4408	.4037250	7026	93 55 94.6	58.3	0.71	71673
25.5	.0783480	1688	.9298693	8939	.4034871	4653	94 24 71.4	35.0	0.71	71756
26.0	.0867835	6040	.9292552	2812	.4032206	1995	94 53 48.2	11.7	0.70	61833
26.5	.0952131	0333	.9285755	6029	.4029256	9051	95 21 85.0	48.4	0.69	71904
27.0	.1036363	4562	.9278301	8589	.4026020	5822	95 50 61.8	25.1	0.67	71968
27.5	.1120524	:8720	.9270191	0493	.4022500	2308	96 19 38.6	1.8	0.64	72025
28.0	.1204607	2800	.9261425	1741	.4018694	8509	96 47 75.4	38.5	0.61	72076
28.5	.1288606	6796	.9252003	2333	.4014603	4324	97 16 52.2	15.2	0.57	72121
29.0	.1372514	0701	.9241926	2270	.4010228	0056	97 44 88.9	51.8	0.53	72159
29.5	.1456325	4509	.9231195	1553	.4005569	5403	98 13 65.6	28.4	0.48	72191
30.0	.1540033	:8215	.9219810	:0183	.4000626	0467	98 42 42.3	5.0	0.43	72216
30.5	.1623632	1812	.9207773	8160	.3995400	5248	99 10 79.0	41.6	0.37	72235
July 1.0	.1707115	5293	.9195084	5486	.3989891	9746	99 39 55.7	18.2	0.31	72246
1.5	.1790476	:8652	.9181745	2161	.3984100	3961	100 7 92.3	54.7	0.25	72251
2.0	.1873708	1882	.9167756	8187	.3978027	7895	100 36 68.9	31.2	0.18	72250
2.5	.1956804	4977	.9153118	3563	.3971672	1547	101 5 45.4	7.6	0.11	72242
3.0	−.2039762	7933	+.9137833	8293	+.3965036	4918	101 33 81.9	44.0	+0.04	72226

Note.—: denotes a change in the preceding figure.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ=☉'s True Longitude.	λ′	β=☉'s Latitude.	Log. Rad. Vect. = ρ.
July 3.5	−.2122573	0743	+.9121903	2377	+.3958121	8009	102° 2′ 58″.4	20″.4	−0″.02	0.00 72207
4.0	.2205231	3400	.9105330	5819	.3950926	0821	102 30 94.8	56.8	0.08	72180
4.5	.2287730	5898	.9088115	8619	.3943453	3355	102 59 71.2	33.1	0.14	72147
5.0	.2370064	:8231	.9070260	0779	.3935702	5611	103 28 47.5	9.3	0.19	72108
5.5	.2452228	0394	.9051765	2298	.3927674	7590	103 56 83.8	45.5	0.24	72065
6.0	.2534215	2381	.9032632	3180	.3919370	9293	104 25 60.1	21.7	0.28	72016
6.5	.2616019	4184	.9012862	3425	.3910790	0720	104 53 96.3	57.8	0.32	71961
7.0	.2697634	5799	.8992458	3036	.3901935	1872	105 22 72.5	33.9	0.35	71900
7.5	.2779055	7220	.8971422	2015	.3892806	2750	105 51 48.6	9.9	0.37	71835
8.0	.2860276	:8441	.8949755	0363	.3883405	3356	106 19 84.7	45.9	0.39	71765
8.5	.2941293	:9458	.8927461	8084	.3873732	3690	106 48 60.8	21.9	0.40	71690
9.0	.3022100	0266	.8904541	5179	.3863787	3753	107 16 96.8	57.8	0.40	71611
9.5	.3102692	0858	.8880996	1649	.3853571	3544	107 45 72.9	33.8	0.39	71527
10.0	.3183063	1230	.8856829	7497	.3843085	3065	108 14 49.0	9.8	0.37	71439
10.5	.3263208	1376	.8832041	2724	.3832329	2316	108 42 85.1	45.8	0.35	71346
11.0	.3343121	1290	.8806634	7332	.3821305	1300	109 11 61.1	21.8	0.33	71250
11.5	.3422797	0967	.8780610	1323	.3810014	0016	109 39 97.3	57.8	0.29	71151
12.0	.3502231	0403	.8753972	4700	.3798458	8467	110 8 73.5	33.9	0.25	71048
12.5	.3581417	:9590	.8726721	7464	.3786637	6653	110 37 49.7	10.0	0.20	70941
13.0	.3660350	:8525	.8698859	9617	.3774551	4575	111 5 85.9	46.1	0.15	70829
13.5	.3739025	7202	.8670388	1161	.3762200	2231	111 34 62.1	22.3	0.09	70714
14.0	.3817438	5617	.8641310	2098	.3749585	9624	112 2 98.5	58.6	−0.03	70596
14.5	.3895584	3765	.8611627	2430	.3736708	6754	112 31 75.0	35.0	+0.03	70474
15.0	.3973458	1641	.8581340	2158	.3723570	3624	113 0 51.6	11.5	0.10	70349
15.5	.4051056	:9241	.8550450	1283	.3710171	0232	113 28 88.4	48.2	0.17	70220
16.0	.4128372	6560	.8518961	9809	.3696511	6580	113 57 65.3	25.0	0.24	70088
16.5	.4205399	3590	.8486875	7738	.3682592	2668	114 26 42.2	1.8	0.31	69952
17.0	.4282131	0325	.8454193	5071	.3668414	8498	114 54 79.3	38.8	0.37	69813
17.5	.4358564	6761	.8420917	1810	.3653979	4070	115 23 56.5	15.9	0.43	69669
18.0	.4434692	2893	.8387049	7957	.3639287	9386	115 51 93.9	53.2	0.49	69522
18.5	.4510511	:8715	.8352591	3514	.3624339	4445	116 20 71.4	30.7	0.55	69372
19.0	.4586015	4223	.8317545	8483	.3609135	9249	116 49 49.2	8.4	0.60	69218
19.5	.4661201	:9413	.8281913	2866	.3593676	3797	117 17 87.2	46.3	0.64	69059
20.0	.4736064	4280	.8245696	6664	.3577963	8092	117 46 65.4	24.4	0.68	68896
20.5	.4810598	:8818	.8208897	9880	.3561996	2132	118 15 43.8	2.7	0.71	68728
21.0	.4884796	3021	.8171517	2515	.3545778	5922	118 43 82.4	41.2	0.74	68555
21.5	.4958653	6882	.8133559	4572	.3529309	9460	119 12 61.3	20.0	0.77	68378
22.0	.5032164	0398	.8095025	6053	.3512589	2748	119 40 100.4	59.0	0.79	68196
22.5	.5105323	3562	.8055919	6962	.3495621	5788	120 9 79.7	38.2	0.79	68010
23.0	.5178124	6368	.8016242	7300	.3478404	8579	120 38 59.2	17.7	0.78	67819
23.5	.5250562	:8811	.7975997	7070	.3460940	1122	121 6 99.0	57.4	0.77	67621
24.0	.5322632	0887	.7935186	6274	.3443231	3421	121 35 79.0	37.4	0.75	67418
24.5	.5394328	2588	.7893810	4913	.3425277	5475	122 4 59.2	17.5	0.72	67210
25.0	.5465644	3910	.7851875	2992	.3407080	7286	122 32 99.7	57.9	0.70	66997
25.5	.5536576	4848	.7809381	:0513	.3388640	8854	123 1 80.4	38.5	0.66	66777
26.0	.5607117	5395	.7766330	7477	.3369959	:0180	123 30 61.3	19.3	0.61	66551
26.5	.5677262	5546	.7722728	3890	.3351037	1266	123 59 42.4	0.3	0.56	66320
27.0	.5747005	5296	.7678576	9752	.3331877	2114	124 27 83.8	41.6	0.51	66083
27.5	.5816340	4638	.7633879	5070	.3312480	2725	124 56 65.4	23.1	0.45	65839
28.0	.5885262	3567	.7588640	9845	.3292847	3099	125 25 47.2	4.9	0.38	65589
28.5	.5953766	2078	.7542861	4081	.3272979	3239	125 53 89.2	46.8	0.32	65333
29.0	.6021846	0165	.7496546	7780	.3252878	3145	126 22 71.4	29.0	0 25	65071
29.5	.6089498	7824	.7449697	0946	.3232545	2820	126 51 53.8	11.3	0.18	64803
30.0	.6156716	5050	.7402317	3580	.3211982	2264	127 19 96.4	53.8	0.11	64529
30.5	.6223496	1838	.7354411	5689	.3191191	1481	127 48 79.2	36.5	+0.05	64248
31.0	.6289833	8183	.7305982	7274	.3670174	0472	128 17 62.3	19.5	−0.01	63961
31 5	.6355722	:4080	.7257034	8341	.3148932	9238	128 46 45.5	2.6	0.07	63669
Aug. 1.0	.6421157	:9523	.7207571	8892	.3127466	7779	129 14 88.9	45.9	0.12	63371
1.5	.6486132	4506	.7157596	8931	.3105779	6100	129 43 72.5	29.4	0.17	63067
2.0	.6550644	:9027	.7107113	8462	.3083871	4199	130 12 56.4	13.3	0.22	62757
2.5	−.6614688	3080	+.7056127	7490	+.3061745	2081	130 40 100.4	57.2	−0.26	62441

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. $0^d.0$.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ=☉'s True Longitude.			λ′	β=☉'s Latitude.	Log. Rad. Vect.=ρ.
							°	′	″	″	″	0.00
Aug. 3.0	—.6678259	6660	+.7004640	6017	+.3039403	9746	131	9	84.6	41.4	—0.30	62120
3.5	.6741352	:9762	.6952658	4049	.3016846	7197	131	38	69.0	25.7	0.33	61794
4.0	.6803964	2383	.6900185	1589	.2994076	4435	132	7	53.5	10.1	0.35	61464
4.5	.6866089	4517	.6847225	8643	.2971095	1462	132	35	98.2	54.7	0.36	61129
5.0	.6927724	6162	.6793781	5212	.2947905	8279	133	4	83.1	39.5	0.37	60789
5.5	.6988864	7312	.6739856	:1301	.2924507	4889	133	33	68.2	24.5	0.37	60444
6.0	.7049506	7964	.6685456	6914	.2900903	1292	134	2	53.5	9.7	0.36	60094
6.5	.7109646	8114	.6630584	2056	.2877095	7492	134	30	99.0	55.1	0.34	59742
7.0	.7169279	7757	.6575246	6731	.2853084	3488	134	59	84.7	40.8	0.32	59385
7.5	.7228402	6890	.6519443	:0941	.2828872	9284	135	28	70.6	26.6	0.29	59024
8.0	.7287010	5510	.6463180	4691	.2804461	4881	135	57	56.7	12.7	0.25	58659
8.5	.7345099	3609	.6406462	7986	.2779853	:0281	136	25	103.1	59.0	0.20	58291
9.0	.7402665	1186	.6349291	:0828	.2755048	5483	136	54	89.7	45.5	0.15	57920
9.5	.7459704	8236	.6291673	3223	.2730050	0493	137	23	76.5	32.2	0.10	57545
10.0	.7516214	4757	.6233612	5175	.2704859	5309	137	52	63.5	19.1	—0.04	57168
10.5	.7572191	0745	.6175111	6687	.2679478	9936	138	21	50.9	6.4	+0.02	56788
11.0	.7627631	6197	.6116174	7762	.2653908	4373	138	49	98.5	54.0	0.09	56405
11.5	.7682531	1108	.6056804	8405	.2628151	8624	139	18	86.3	41.7	0.16	56019
12.0	.7736886	5475	.5997007	8620	.2602208	2688	139	47	74.5	29.9	0.22	55630
12.5	.7790693	:9294	.5936785	8411	.2576081	6569	140	16	63.0	18.3	0.29	55240
13.0	.7843949	2562	.5876143	7781	.2549771	:0266	140	45	51.7	7.0	0.36	54847
13.5	.7896650	5275	.5815085	6735	.2523280	3783	141	13	100.8	56.0	0.42	54451
14.0	.7948791	7428	.5753615	5277	.2496610	7120	141	42	90.2	45.3	0.48	54053
14.5	.8000370	:9019	.5691737	3411	.2469763	:0281	142	11	80.0	35.0	0.54	53652
15.0	.8051382	0044	.5629454	:1140	.2442740	3265	142	40	70.1	25.0	0.59	53249
15.5	.8101824	0499	.5566771	8469	.2415543	6075	143	9	60.5	15.3	0.64	52843
16.0	.8151691	0379	.5503691	5400	.2388175	8714	143	38	51.3	6.1	0.68	52434
16.5	.8200981	:9682	.5440219	1940	.2360636	1182	144	6	102.6	57.3	0.72	52023
17.0	.8249689	8404	.5376358	8090	.2332927	3481	144	35	94.2	48.9	0.75	51609
17.5	.8297812	6540	.5312112	3856	.2305051	5612	145	4	86.1	40.7	0.77	51192
18.0	.8345347	4089	.5247486	9241	.2277010	7578	145	33	78.4	33.0	0.78	50772
18.5	.8392289	1045	.5182483	4249	.2248805	9380	146	2	71.2	25.7	0.78	50349
19.0	.8438635	7405	.5117108	8885	.2220437	1019	146	31	64.4	18.8	0.78	49923
19.5	.8484381	3165	.5051364	3152	.2191910	2499	147	0	58.0	12.3	0.77	49494
20.0	.8529524	8322	.4985256	7055	.2163224	3820	147	29	52.1	6.4	0.76	49062
20.5	.8574059	2871	.4918789	:0599	.2134382	4985	147	58	46.6	0.8	0.73	48625
21.0	.8617981	6808	.8451967	3787	.2105385	5995	148	26	101.5	55.7	0.70	48185
21.5	.8661288	0129	.4784794	6625	.2076235	6852	148	55	96.9	51.0	0.66	47741
22.0	.8703976	2832	.4717275	9116	.2046935	7558	149	24	92.7	46.8	0.62	47293
22.5	.8746041	4912	.4649414	:1265	.2017486	8116	149	53	89.0	43.0	0.57	46841
23.0	.8787480	6366	.4581217	3078	.1987891	8528	150	22	85.7	39.6	0.52	46384
23.5	.8828289	7190	.4512689	4560	.1958152	8796	150	51	82.7	36.6	0.47	45924
24.0	.8868464	7380	.4443834	5715	.1928271	8921	151	20	80.2	34.0	0.41	45459
24.5	.8908001	6932	.4374657	6548	.1898251	8908	151	49	78.0	31.7	0.35	44989
25.0	.8946896	5843	.4305163	7063	.1868094	8757	152	18	76.4	30.1	0.28	44515
25.5	.8985147	4110	.4235358	7268	.1837802	8472	152	47	75.2	28.8	0.21	44036
26.0	.9022751	1730	.4165246	7165	.1807376	8052	153	16	74.4	28.0	0.14	43553
26.5	.9059705	8700	.4094832	6760	.1776819	7502	153	45	74.0	27.5	0.07	43065
27.0	.9096006	5017	.4024122	6059	.1746134	6823	154	14	74.0	27.5	+0.01	42573
27.5	.9131650	0677	.3953120	5066	.1715323	6019	154	43	74.4	27.9	—0.05	42075
28.0	.9166633	5676	.3881832	3787	.1684387	5089	155	12	75.3	28.7	0.11	41573
28.5	.9200953	0012	.3810263	2227	.1653329	4038	155	41	76.5	29.8	0.16	41066
29.0	.9234608	3684	.3738419	:0391	.1622152	2867	156	10	78.1	31.3	0.21	40555
29.5	.9267594	6687	.3666305	8285	.1590858	1580	156	39	80.1	33.2	0.25	40039
30.0	.9299910	9020	.3593927	5915	.1559450	:0178	157	8	82.6	35.5	0.29	39519
30.5	.9331553	0680	.3521291	3287	.1527931	8666	157	37	85.3	38.3	0.32	38995
31.0	.9362520	1664	.3448402	:0406	.1496302	7043	158	6	88.4	41.4	0.35	38466
31.5	.9392809	1970	.3375267	7279	.1464567	5314	158	35	92.0	44.9	0.37	37933
Sept. 1.0	.9422417	1595	.3301890	3910	.1432726	3479	159	4	96.0	48.8	0.38	37397
1.5	.9451343	0538	.3228277	:0305	.1400783	1542	159	33	100.2	53.0	0.38	36857
2.0	—.9479584	8797	+.3154434	6469	+.1368741	9506	160	2	104.8	57.6	—0.38	36314

NOTE.—: denotes a change in the preceding figure.

SUN'S COÖRDINATES, 1878.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Sept. 2.5	−.9507138	6368	+.3080366	2408	+.1336602	7373	160° 32′ 49″.8	2″.5	−0″.37	0.00 35767
3.0	.9534002	3250	.3006077	8126	.1304367	5143	161 1 55.2	7.8	0.35	35216
3.5	.9560175	:9440	.2931573	3629	.1272039	2821	161 30 60.9	13.4	0.32	34663
4.0	.9585656	4939	.2856861	8924	.1239622	:0410	161 59 67.0	19.5	0.29	34107
4.5	.9610443	:9744	.2781946	4016	.1207117	7911	162 28 73.5	25.9	0.25	33548
5.0	.9634534	3853	.2706833	8909	.1174528	5327	162 57 80.2	32.6	0.21	32987
5.5	.9657929	7266	.2631527	3609	.1141855	2660	163 26 87.4	39.7	0.16	32425
6.0	.9680627	:9982	.2556035	8123	.1109102	9912	163 55 95.0	47.3	0.10	31860
6.5	.9702626	1999	.2480363	2457	.1076270	7086	164 24 102.9	55.1	−0.04	31293
7.0	.9723923	3315	.2404517	6617	.1043362	4183	164 54 51.1	3.3	+0.02	30725
7.5	.9744517	3927	.2328500	:0606	.1010380	1207	165 23 59.8	11.9	0.09	30156
8.0	.9764407	3836	.2252318	4430	.0977327	8159	165 52 68.9	20.9	0.15	29585
8.5	.4783592	3040	.2175975	8093	.0944204	5041	166 21 78.4	30.3	0.22	29012
9.0	.9802071	1538	.2099477	:1600	.0911013	1855	166 50 88.3	40.2	0.28	28438
9.5	.9819841	9327	.2022829	4957	.0877757	8604	167 19 98.7	50.5	0.35	27864
10.0	.9836901	6406	.1946036	8169	.0844439	5291	167 49 49.5	1.3	0.41	27290
10.5	.9853250	2774	.1869104	:1242	.0811061	1918	168 18 60.7	12.4	0.47	26714
11.0	.9868886	8429	.1792039	4182	.0777624	8486	168 47 72.2	23.9	0.52	26138
11.5	.9883809	3371	.1714844	6992	.0744131	4998	169 16 84.2	35.9	0.57	25562
12.0	.9898019	7600	.1637526	9678	.0710583	1455	169 45 96.8	48.4	0.61	24985
12.5	.9911515	1115	.1560088	2244	.0676983	7860	170 15 49.9	1.4	0.65	24407
13.0	.9924295	3915	.1482535	4695	.0643333	4214	170 44 63.5	15.0	0.68	23830
13.5	.9936357	5996	.1404874	7038	.0609636	:0522	171 13 77.6	29.0	0.71	23252
14.0	.9947700	7359	.1327109	9276	.0575893	6783	171 42 92.1	43.5	0.73	22673
14.5	.9958322	8000	.1249246	:1417	.0542108	3003	172 11 107.2	58.5	0.74	22094
15.0	.9968221	7919	.1171291	3465	.0508282	9181	172 41 62.8	14.1	0.74	21514
15.5	.9977396	7114	.1093248	5425	.0474418	5322	173 10 78.9	30.2	0.73	20933
16.0	.9985846	5584	.1015122	7302	.0440517	1425	173 39 95.6	46.8	0.72	20352
16.5	.9993569	3327	.0936919	9102	.0406583	7496	174 9 52.8	3.9	0.70	20770
17.0	1.0000566	0344	.0858645	:0831	.0372617	3533	174 38 70.6	21.7	0.67	19187
17.5	1.0006836	6634	.0780305	2494	.0338622	9542	175 7 88.9	39.9	0.63	18602
18.0	1.0012377	2195	.0701906	4097	.0304601	5525	175 36 107.7	58.6	0.58	18016
18.5	1.0017186	7024	.0623452	5645	.0270556	1484	176 6 67.1	17.9	0.53	17430
19 0	1.0021263	1122	.0544949	7144	.0236488	7420	176 35 87.1	37.9	0.48	16842
19.5	1.0024607	4486	.0466403	8600	.0202402	3338	177 4 107.6	58.3	0,42	16252
20.0	1.0027217	7116	.0387819	:0018	.0168300	9240	177 34 68.7	19.4	0.35	15660
20.5	1.0029092	9011	.0309203	:1404	.0134184	5128	178 3 90.3	40.9	0.29	15067
21.0	1.0030231	0171	.0230561	2763	.0100057	1004	178 33 52.5	3.1	0.22	14472
21.5	1.0030633	0593	.0151899	4102	.0065921	6872	179 2 75.3	25.8	0.16	13874
22.0	1.0030298	0279	+.0073223	5427	+.0031779	2733	179 31 98.6	49.1	0.09	13275
22.5	1.0029224	9225	−.0005461	3256	−.0002367	1412	180 1 62.4	12.8	+0.02	12673
23.0	1.0027412	7434	.0084147	1941	.0036513	5552	180 30 86.8	37.2	−0.04	12069
23.5	1.0024860	4902	.0162829	0622	.0070658	:9693	181 0 51.7	2.0	0.11	11462
24.0	1.0021568	1631	.0241501	:9294	.0104798	3830	181 29 77.1	27.4	0.17	10853
24.5	1.0017537	7621	.0320157	:7949	.0138931	7960	181 58 103.1	53.3	0.23	10242
25.0	1.0012766	2871	.0398790	6582	.0173054	2080	182 28 69.7	19.9	0.28	09629
25.5	1.0007256	7382	.0477395	5187	.0207164	6187	182 57 96.7	46.8	0.32	09014
26.0	1.0001007	1154	.0555965	3757	.0241259	0279	183 27 64.2	14.3	0.36	08396
26.5	.9994019	4187	.0634494	2286	.0275336	4353	183 56 92.3	42.3	0.39	07777
27.0	.9986291	6480	.0712977	0770	.0309392	8406	184 26 60.9	10.9	0.42	07155
27.5	.9977824	8034	.0791406	:9199	.0343425	2436	184 55 89.9	39.8	0.44	06531
28.0	.9968618	8849	.0869776	7570	.0377432	6441	185 25 59.4	9.3	0.46	05905
28.5	.9958673	8925	.0948080	5875	.0411410	0416	185 54 89.4	39.2	0.47	05277
29.0	.9947991	8264	.1026312	4108	.0445357	4361	186 24 60.0	9.8	0.46	04646
29.5	.9936573	6867	.1104466	2263	.0479269	8270	186 53 91.0	40.7	0.45	04014
30.0	.9924419	4734	.1182536	0335	.0513145	2144	187 23 62.4	12.1	0.43	03381
30.5	.9911530	1866	.1260516	:8316	.0546981	5978	187 32 94.3	43.9	0.41	02745
Oct. 1.0	.9897907	8264	.1338400	6202	.0580775	:9770	188 22 66.6	16.2	0.38	02108
1.5	.9883551	3929	.1416182	3986	.0614523	3516	188 51 99.3	48.8	0.34	01471
2.0	.9868464	8863	.1493856	1662	.0648225	7216	189 21 72.5	22 0	0.30	00833
2.5	−.9852647	3067	−.1571416	:9224	−.0681876	0865	189 50 106.2	55.6	−0.26	00194

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. 0^{d}.0.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ=☉'s True Longitude.			λ′	β=☉'s Latitude.	Log. Rad. Vect.=ρ.
							°	′	″	″	″	9.99
Oct. 3.0	—.9836102	6543	—.1648856	6666	—.0715475	4463	190	20	80.4	29.7	—0.20	◆99554
3.5	.9818829	9291	.1726170	3983	.0749019	8005	190	50	54.9	4.2	0.14	98915
4.0	.9800829	1312	.1803352	1168	0782507	1492	191	19	89.9	39.2	0.08	98276
4.5	.9782104	2608	.1880397	:8216	0815935	4918	191	49	65.3	14.5	—0.02	97636
5.0	.9762655	3180	.2957300	5122	.0849301	8283	192	18	101.2	50.4	+0.04	96996
5.5	.9742485	3031	.2034055	1880	.0882603	1583	192	48	77.5	26.6	0.10	96357
6.0	.9721595	2162	.2110656	:8484	.0915838	4817	193	18	54.3	3.4	0.17	95719
6.5	.9699988	:0576	.2187098	4929	.0949004	7982	193	47	91.5	40.5	0.23	95082
7.0	.9677665	8275	.2263374	1209	.0982098	1075	194	17	69.1	18.1	0.29	94447
7.5	.9654627	5259	.2339479	7318	.1015118	4094	194	46	107.2	56.2	0.34	93813
8.0	.9630876	1529	.2415408	3251	.1048062	7037	195	16	85.7	34.6	0.39	93180
8.5	.9606412	7086	.2491157	:9004	.1080928	:9902	195	46	64.7	13.6	0.44	92548
9.0	.9581238	1933	.2566719	4570	.1113713	2686	196	15	104.2	53.0	0.49	91918
9.5	.9555354	6071	.2642090	:9945	.1146416	5388	196	45	84.2	33.0	0.53	91290
10.0	.9528762	9500	.2717265	5125	.1179034	8006	197	15	64.7	13.4	0.57	90664
10.5	.6501464	2223	.2792239	0104	.1211565	0536	197	44	105.7	54.4	0.59	90039
11.0	.9473463	4243	.2867006	4876	.1244007	2978	198	14	87.2	35.8	0.61	89416
11.5	.9444760	5561	.2941561	:9436	.1276357	5327	198	44	69.3	17.8	0.62	88796
12.0	.9415357	6179	.3015898	3779	.1308612	7582	199	14	51.9	0.3	0.62	88178
12.5	.9385255	6098	.3090012	:7898	.1340771	:9741	199	43	94.8	43.3	0.62	87562
13.0	.9354457	5321	.3163898	1790	.1372831	1801	200	13	78.4	26.8	0.61	86949
13.5	.9322964	3849	.3237550	5448	.1404790	3760	200	43	62.6	10.9	0.59	86339
14.0	.9290778	1684	.3310962	:8866	.1436646	5616	201	12	107.3	55.5	0.56	85730
14.5	.9257899	8826	.3384130	2040	.1468396	7366	201	42	92.5	40.7	0.53	85122
15.0	.9224329	5277	.3457048	4964	.1500039	:9009	202	12	78.2	26.4	0.49	84516
15.5	.9190069	1038	.3529711	7633	.1531571	0541	202	42	64.6	12.7	0.44	83913
16.0	.9155122	6112	.3602114	0043	.1562990	1961	203	11	111.5	59.5	0.39	83312
16.5	.9119490	:0503	.3674251	2187	.1594294	3265	203	41	99.0	46.9	0.33	82712
17.0	.9083175	4207	.3746117	4060	.1625481	4453	204	11	87.1	34.9	0.27	82114
17.5	.9046179	7232	.3817707	5657	.1656548	5520	204	41	75.8	23.6	0.21	81516
18.0	.9008504	9578	.3889015	6972	.1687493	6466	205	11	65.0	12.7	0.14	80921
18.5	.8970153	1248	.3860035	:7999	.1718313	7287	205	41	54.8	2.5	+0.07	80328
19.0	.8931127	2243	.4030761	:8733	.1749005	7980	206	10	105.2	52.8	0.00	79736
19.5	.8891429	2566	.4101188	:9168	.1779567	8543	206	40	96.2	43.7	—0.07	79144
20.0	.8851061	2219	.4171308	:9296	.1809996	8973	207	10	87.7	35.2	0.14	78552
20.5	.8810025	1204	.4241118	:9114	.1840290	:9268	207	40	79.8	27.3	0.20	77962
21.0	.8768324	9523	.4310610	:8614	.1870447	:9427	208	10	72.4	19.8	0.26	77373
21.5	.8725960	7181	.4379780	7792	.1900464	:9445	208	40	65.6	12.9	0.32	76785
22.0	.8682936	4177	.4448622	6643	.1930338	:9321	209	10	59.3	6.5	0.37	76197
22.5	.8639254	:0516	.4517130	5159	.1960068	:9054	209	40	53.6	0.8	0.42	75609
23.0	.8594918	6200	.4585300	3338	.1989650	8636	210	9	108.4	55.5	0.47	75021
23.5	.8549930	:1233	.4653126	1173	.2019082	8070	210	39	103.8	50.9	0.51	74434
24.0	.8504294	5617	.4720602	:8658	.2048362	7352	211	9	99.7	46.7	0.54	73848
24.5	.8458014	9358	.4787721	5786	.2077486	6478	211	39	96.1	43.1	0.56	73263
25.0	.8411093	2457	.4854477	2551	.2106452	5446	212	9	93.0	39.9	0.58	72677
25.5	.8363535	4920	.4920866	:8949	.2135258	4254	212	39	90.3	37.2	0.59	72091
26.0	.8315343	6748	.4986882	4975	.2163902	2900	213	9	88.1	34.9	0.59	71506
26.5	.8266520	7945	.5052518	0621	.2192381	1381	213	39	86.5	33.2	0.58	70922
27.0	.8217070	8515	.5117769	5882	.2220694	:9697	214	9	85.3	31.9	0.57	70338
27.5	.8166996	8461	.5182631	0754	.2248838	7843	214	39	84.6	31.2	0.54	69754
28.0	.8116302	7787	.5247100	5234	.2276811	5819	215	9	84.3	30.9	0.51	69171
28.5	.8064994	6499	.5311170	:9314	.2304610	3621	215	39	84.5	31.0	0.48	68589
29.0	.8013076	4600	.5374835	2990	.2332233	1247	216	9	85.1	31.5	0.44	68009
29.5	.7960552	2096	.5438090	6256	.2359677	8694	216	39	86.0	32.4	0.39	67431
30.0	.7907426	8990	.5500929	:9106	.2386941	5961	217	9	87.4	33.7	0.34	66853
30.5	.7853701	5285	.5563348	1537	.2414022	3045	217	39	89.3	35.5	0.28	66276
31.0	.7799382	:0985	.5625342	3541	.2440918	:9944	218	9	91.6	37.7	0.22	65701
31.5	.7744472	6095	.5686908	5117	.2467628	6657	218	39	94.2	40.2	0.16	65128
Nov. 1.0	.7688975	:0617	.5748039	6261	.2494149	3181	219	9	97.2	43.1	0.09	64557
1.5	.7632897	4559	.5808731	6965	.2520480	:9515	219	39	100.6	46.5	—0.03	63988
2.0	—.7576243	7924	—.5868979	7225	—.2546619	5658	220	9	104.5	50.3	+0.04	63422

◆ The first figures of this and the following logarithms are 9.99.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Nov. 2.5	—.7519017	;0718	—.5928779	7037	—.2572563	1605	220° 39′ 108″.7	54″.5	+0″.11	9.99 62859
3.0	.7461223	2943	.5988126	6396	.2598312	7358	221 9 113.3	59.0	0.17	62298
3.5	.7402866	4605	.6047016	5297	.2623862	2912	221 40 58.3	4.0	0.23	61740
4.0	.7343951	5709	.6105444	3739	.2649211	8265	222 10 63.6	9.2	0.28	61185
4.5	.7284482	6259	.6163407	1714	.2674359	3417	222 40 69.3	14.8	0.33	60634
5.0	.7224463	6259	.6220900	;9220	.2699302	8364	223 10 75.4	20.8	0.38	60087
5.5	.7163898	5713	.6277921	6254	.2724041	3107	223 40 81.9	27.2	0.42	59543
6.0	.7102791	4625	.6334464	2810	.2748572	7642	224 10 88.9	34.1	0.46	59003
6.5	.7041148	3001	.6390526	8885	.2772895	1969	224 40 96.2	41.4	0.49	58467
7.0	.6978972	;0844	.6446101	4473	.2797008	6087	225 10 103.9	49.0	0.51	57936
7.5	.6916269	8160	.6501187	;9572	.2820909	;9992	225 40 112.0	57.1	0.52	57409
8.0	.6853044	4953	.6555778	4177	.2844596	3684	226 11 60.5	5.5	0.53	56887
8.5	.6789300	;1228	.6609871	8284	.2868068	7160	226 41 69.4	14.3	0.52	56369
9.0	.6725042	6988	.6663462	1889	.2891322	0419	227 11 78.7	23.5	0.51	55856
9.5	.6660274	2238	.6716546	4987	.2914357	3459	227 41 88.4	33.1	0.49	55347
10.0	.6595000	6982	.6769120	7575	.2937172	6279	228 11 98.6	43.2	0.47	54844
10.5	.6529226	;1226	.6821181	;9650	.2959763	8875	228 41 108.2	53.7	0.44	54345
11.0	.6462955	4973	.6872725	1209	.2982130	1247	229 12 60.2	4.6	0.40	53851
11.5	.6396192	8228	.6923748	2246	.3004270	3392	229 42 71.6	16.0	0.36	53362
12.0	.6328940	;0994	.6974244	2757	.3026182	5310	230 12 83.5	27.8	0.31	52878
12.5	.6261204	3276	.7024211	2739	.3047865	6998	230 42 95.9	40.2	0.26	52398
13.0	.6192990	5079	.7073644	2186	.3069316	8455	231 12 108.7	52.9	0.20	51922
13.5	.6124302	6409	.7122539	1097	.3090535	;9679	231 43 62.0	6.1	0.14	51451
14.0	.6055144	7268	.7170893	;9467	.3111519	0669	232 13 75.7	19.7	0.08	50985
14.5	.5985521	7662	.7218702	7291	.3132268	1424	232 43 89.9	33.8	+0.01	50523
15.0	.5915439	7597	.7265963	4568	.3152778	1940	233 13 104.5	48.3	—0.06	50066
15.5	.5844902	7077	.7312670	1291	.3173049	2217	233 44 59.6	3.3	0.13	49613
16.0	.5773914	6106	.7358820	7457	.3193077	2251	234 14 75.2	18.8	0.20	49164
16.5	.5702480	4689	.7404409	3062	.3212862	2042	234 44 91.2	34.8	0.27	48718
17.0	.5630606	2831	.7449433	8103	.3232401	1587	235 14 107.7	51.2	0.33	48277
17.5	.5558297	;0539	.7493889	2575	.3251693	0885	235 45 64.7	8.2	0.39	47840
18.0	.5485557	7815	.7537772	6475	.3270737	;9936	236 15 82.2	25.6	0.45	47407
18.5	.5412392	4666	.7581078	;9798	.3289529	8734	236 45 100.0	43.3	0.50	46977
19.0	.5338808	;1098	.7623804	2541	.3308070	7282	237 16 58.3	1.5	0.55	46550
19.5	.5264811	7117	.7665944	4698	.3326365	5574	237 46 77.0	20.1	0.58	46127
20.0	.5190406	2728	.7707494	6265	.3344386	3611	238 16 96.1	39.1	0.62	45707
20.5	.5115598	7936	.7748451	7239	.3362159	1390	238 46 115.6	58.8	0.65	45289
21.0	.5040393	2746	.7788812	7618	.3379672	8910	239 17 75.6	18.4	0.67	44875
21.5	.4964796	7164	.7828573	7397	.3396924	6169	239 47 96.0	38.8	0.68	44463
22.0	.4888814	;1198	.7867729	6571	.3413915	3167	240 17 116.7	59.4	0.68	44054
22.5	.4812453	4852	.7906280	5140	.3430643	;9902	240 48 77.8	20.4	0.67	43648
23.0	.4735718	8133	.7944220	3098	.3447105	6371	241 18 99.3	41.8	0.66	43245
23.5	.4658616	;1046	.7981547	0443	.3463300	2573	241 39 61.2	3.6	0.64	42845
24.0	.4581154	3599	.8018257	7171	.3479227	8508	242 19 83.4	25.7	0.62	42447
24.5	.4503337	5796	.8054347	3279	.3494885	4173	242 49 105.9	48.1	0.59	42053
25.0	.4425172	7645	.8089813	8764	.3510271	;9567	243 20 68.7	10.8	0.55	41662
25.5	.4346665	9153	.8124652	3622	.3525385	4689	243 50 91.9	33.9	0.51	41273
26.0	.4267822	;0324	.8158861	7850	.3540225	;9537	244 20 115.4	57.3	0.46	40887
26.5	.4188649	;1165	.8192438	1446	.3554791	4111	244 51 79.1	21.0	0.41	40504
27.0	.4109153	;1683	.8225378	4405	.3569081	8409	245 21 103.1	44.9	0.35	40124
27.5	.4029341	;1885	.8257680	6726	.3583093	2429	245 52 67.4	9.2	0.29	39747
28.0	.3949219	;1776	.8289342	8408	.3596827	6171	246 22 92.0	33.7	0.23	39374
28.5	.3868795	;1366	.8320360	;9445	.3610283	;9635	246 52 116.7	58.3	0.17	39005
29.0	.3788076	;0660	.8350733	;9838	.3623459	2819	247 23 81.7	23.2	0.10	38639
29.5	.3707067	9664	.8380460	;9585	.3636353	5721	247 53 107.0	48.4	—0.03	37277
30.0	.3625775	8385	.8409537	8682	.3648965	8341	248 24 72.5	13.8	+0.03	37919
30.5	.3544206	6829	.8437962	7127	.3661295	0679	248 54 98.2	39.4	0.09	37565
Dec. 1.0	.3462366	5002	.8465734	4919	.3673342	2735	249 25 64.1	5.2	0.15	37216
1.5	.3380262	2911	.8492851	2056	.3685105	4506	249 55 90.3	31.3	0.20	36872
2.0	—.3297900	;0561	—.8519310	8536	—.3696582	5992	250 25 116.7	57.7	+0.25	36532

NOTE.—The accented letters correspond to the mean equinox and equator of Jan. $0^{d}.0$.

Date.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
1878.	X.	X′.	Y.	Y′.	Z.	Z′.	λ=☉'s True Longitude.	λ′	β=☉'s Latitude.	Log. Rad. Vect. = ρ.
Dec. 2.5	—.3215287	7960	—.8545110	4358	—.3707773	7191	250° 56′ 83″.2	24″.1	+0″.29	9.99 36198
3.0	.3132428	5113	.8570248	:9515	.3718678	8105	251 26 109.9	50.7	0.33	35869
3.5	.3049331	:2028	.8594724	4012	.3729296	8731	251 57 76.8	17.5	0.36	35545
4.0	.2966004	8713	.8618535	7844	.3739626	9070	252 27 104.0	44.6	0.38	35227
4.5	.2882451	5172	.8641679	1009	.3749668	9121	252 58 71.3	11.8	0.40	34914
5.0	.2798679	:1411	.8664155	3506	.3759421	8883	253 28 98.8	39.2	0.41	34607
5.5	.2714694	7437	.8685962	5334	.3768883	8354	353 59 66.5	6.8	0.41	34306
6.0	.2630502	3256	.8707099	6493	.3778055	7535	254 29 94.4	34.6	0.41	34011
6.5	.2546110	8875	.8727564	6979	.3786935	6424	255 0 62.5	2.7	0.40	33723
7.0	.2461524	4299	.8747355	6792	.3795523	5021	255 30 90.8	30.9	0.38	33441
7.5	.2376750	9535	.8766472	5931	.3803818	3325	256 0 119.3	59.3	0.35	33165
8.0	.2291794	4589	.8784913	4394	.3811821	1337	256 31 87.9	27.8	0.32	32896
8.5	.2206662	9467	.8802677	2180	.3819530	9055	257 1 116.8	56.6	0.28	32634
9.0	.2121360	4175	.8819762	9287	.3826945	6480	257 32 85.9	25.6	0.23	32378
9.5	.2035894	8719	.8836166	5713	.3834065	3609	258 2 115.2	54.8	0.17	32129
10.0	.1950270	3104	.8851888	1457	.3840890	0444	258 33 84.8	24.3	0.12	31886
10.5	.1864495	7338	.8866928	6519	.3847418	6981	259 3 114.6	54.0	+0.06	31650
11.0	.1778575	:1427	.8881284	0898	.3853650	3223	259 34 84.6	23.9	—0.01	31421
11.5	.1692516	5377	.8894954	4590	.3859585	9167	260 4 114.8	54.0	0.08	31198
12.0	.1606323	9193	.8907937	7596	.3865222	4814	260 35 85.2	24.3	0.15	30982
12.5	.1520003	2881	.8920233	:9915	.3870561	0163	261 5 115.9	54.9	0.22	30773
13.0	.1433562	6448	.8931840	1545	.3875601	5213	261 36 86.8	25.7	0.29	30570
13.5	.1347006	9900	.8942757	2485	.3880341	:9963	262 6 117.9	56.7	0.36	30373
14.0	.1260343	3243	.8952982	2733	.3884781	4413	262 37 89.4	28.1	0.42	30183
14.5	.1173579	6489	.8962513	2287	.3888920	8562	263 7 121.1	59.7	0.48	29998
15.0	.1086721	9638	.8971350	1147	.3892757	2409	263 38 93.0	31.5	0.54	29819
15.5	.0999776	:2700	.8979492	9312	.3896293	5955	264 9 65.0	3.4	0.59	29646
16.0	.0912749	5680	.8986938	6782	.3899526	9199	264 39 97.3	35.6	0.64	29479
16.5	.0825648	8586	.8993686	3553	.3902456	2139	265 10 69.9	8.2	0.69	29316
17.0	.0738479	:1423	.8999735	9626	.3905082	4775	265 40 102.7	40.9	0.73	29159
17.5	.0651249	4199	.9005085	5000	.3907405	7108	266 11 75.6	13.7	0.76	29008
18.0	.0563964	6921	.9009735	9674	.3909423	9137	266 41 108.8	46.8	0.78	28862
18.5	.0476630	9593	.9013684	3647	.3911137	0861	267 12 82.2	20.1	0.80	28720
19.0	.0389254	:2222	.9016934	6921	.3912547	2282	267 42 115.8	53.6	0.81	28583
19.5	.0301844	4818	.9019478	9489	.3913651	3396	268 13 89.6	27.3	0.80	28451
20.0	.0214408	7387	.9021318	1353	.3914449	4205	268 44 63.6	1.2	0.80	28324
20.5	.0126953	9937	.9022455	2514	.3914941	4707	269 14 97.6	35.1	0.78	28201
21.0	—.0039485	:2473	.9022888	2971	.3915127	4904	269 45 71.8	9.2	0.75	28082
21.5	+.0047988	4995	.9022616	2723	.3915007	4795	270 15 106.3	43.6	0.72	27968
22.0	.0135458	2461	.9021639	1771	.3914582	4381	270 46 80.9	18.1	0.68	27858
22.5	.0222919	:9918	.9019958	:0114	.3913850	3660	271 16 115.6	52.7	0.64	27752
23.0	.0310363	:7359	.9017572	7753	3912812	2633	271 47 90.3	27.3	0.59	27650
23.5	.0397784	4776	.9014481	4686	.3911468	1300	272 18 65.2	2.1	0.54	27552
24.0	.0485174	2163	.9010685	0915	.3909818	9661	272 48 100.2	37.0	0.48	27458
24.5	.0572527	:9513	.9006184	6438	.3907862	7716	273 19 75.2	11.9	0.42	27368
25.0	.0659836	6819	.9000980	1259	.3905600	5465	273 49 110.3	46.9	0.36	27283
25.5	.0747092	4072	.8995072	5376	.3903033	2909	274 20 85.5	22.0	0.30	27202
26.0	.0834288	1266	.8988461	8790	.3900161	0048	274 50 120.7	57.1	0.23	27125
26.5	.0921416	:8392	.8981147	1501	.3896984	6882	275 21 95.9	32.2	0.17	27053
27.0	.1008469	5443	.8973131	3510	.3893502	3411	275 52 71.1	7.3	0.10	26985
27.5	.1095441	2413	.8964413	4817	.3889716	9636	276 22 106.3	42.4	—0.04	26920
28.0	.1182324	:9295	.8954995	5424	.3885627	5559	276 53 81.5	17.5	+0.02	26860
28.5	.1269111	6081	.8944878	5332	.3881235	1178	277 23 116.7	52.6	0.08	26806
29.0	.1355796	2765	.8934064	4543	.3876540	6495	277 54 91.9	27.7	0.13	26756
29.5	.1442371	:9339	.8922554	3058	.3871543	1509	278 25 67.0	2.7	0.17	26711
30.0	.1528830	5798	.8910349	0879	.3866245	6223	278 55 102.0	37.6	0.21	26672
30.5	.1615166	2134	.8897451	8006	.3860647	0636	279 26 77.0	12.5	0.25	26638
31.0	.1701372	:8340	.8883860	4440	.3854749	4750	279 56 111.9	47.3	0.28	26610
31.5	.1787441	4409	.8869579	:0184	.3848551	8563	280 27 86.8	22.1	0.30	26587
32.0	+.1873367	0336	—.8854608	5239	—.3842054	2078	280 57 121.6	56.8	+0.31	26570

Note.—: denotes a change in the preceding figure.

MERCURY.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240					° ′ ″			
Jan. 0	6985	+0.2161	+0.2285	-0.0001	9.4970	46 48.6	-6.79	- 7.17	+0.01
5	6990	+0.0658	0.2998	+0.0195	9.4879	78 8.0	-2.20	10.03	-0.66
10	6995	-0.1006	0.2973	0.0342	9.5005	109 11.9	+3.09	9.12	1.05
15	7000	0.2453	0.2273	0.0412	9.5289	137 22.6	6.18	5.72	1.04
20	7005	0.3445	+0.1137	0.0405	9.5632	161 41.2	6.85	- 2.26	0.81
25	7010	0.3924	-0.0179	0.0336	9.5960	182 28.5	6.23	+ 0.28	0.53
30	7015	0.3932	0.1478	0.0228	9.6237	200 32.4	5.16	1.93	0.30
Feb. 4	7020	0.3548	0.2634	+0.0095	9.6449	216 40.4	4.01	2.97	-0.11
9	7025	0.2859	0.3565	-0.0045	9.6505	231 31.3	2.93	3.64	+0.05
14	7030	0.1949	0.4223	0.0182	9.6674	245 37.7	1.89	4.08	0.18
19	7035	-0.0892	0.4567	0.0307	9.6688	259 25.9	+0.86	4.38	0.29
24	7040	+0.0227	0.4581	0.0408	9.6636	273 21.2	-0.22	4.56	0.41
March 1	7045	0.1327	0.4251	0.0478	9.6519	287 49.6	1.43	4.58	0.51
6	7050	0.2321	0.3572	0.0510	9.6335	303 20.6	2.84	4.37	0.63
11	7055	0.3095	0.2565	0.0494	9.6085	320 29.7	4.50	3.73	0.72
16	7060	0.3523	-0.1278	0.0424	9.5776	340 1.2	6.34	+ 2.31	0.76
21	7065	0.3474	+0.0175	0.0296	9.5433	2 44.6	7.92	- 0.41	0.68
26	7070	0.2832	0.1588	-0.0119	9.5113	29 17.6	8.06	4.52	+0.34
31	7075	+0.1595	0.2665	+0.0082	9.4908	59 21.9	-5.24	8.71	-0.27
April 5	7080	-0.0023	0.3080	0.0262	9.4905	90 57.7	+0.07	10.12	0.86
10	7085	0.1638	0.2759	0.0380	9.5107	121 5.3	4.68	7.89	1.09
15	7090	0.2917	0.1847	0.0418	9.5426	147 43.1	6.69	4.24	0.96
20	7095	0.3700	+0.0611	0.0383	9.5770	170 30.8	6.69	- 1.11	0.69
25	7100	0.3979	-0.0716	0.0296	9.6079	190 5.6	5.81	+ 1.04	0.43
30	7105	0.3818	0.1969	0.0176	9.6331	207 17.1	4.68	2.42	0.21
May 5	7110	0.3300	0.3041	+0.0039	9.6516	222 49.7	3.56	3.28	-0.04
10	7115	0.2511	0.3867	-0.0102	9.6635	237 19.0	2.50	3.85	+0.10
15	7120	0.1522	0.4400	0.0235	9.6687	251 14.8	1.48	4.23	0.23
20	7125	-0.0441	0.4614	0.0351	9.6675	265 2.9	+0.43	4.47	0.34
25	7130	+0.0686	0.4489	0.0440	9.6597	279 8.4	-0.69	4.59	0.45
30	7135	0.1751	0.4017	0.0496	9.6453	293 58.4	1.97	4.53	0.56
June 4	7140	0.2667	0.3200	0.0509	9.6241	310 4.5	3.48	4.18	0.67
9	7145	0.3317	0.2072	0.0472	9.5966	328 5.7	5.24	3.28	0.74
14	7150	0.3569	-0.0699	0.0379	9.5639	348 49.1	7.07	+ 1.38	0.75
19	7155	0.3288	+0.0771	0.0229	9.5296	13 3.1	8.26	- 1.96	0.57
24	7160	0.2395	0.2082	-0.0038	9.5009	41 9.3	7.33	6.37	+0.12
29	7165	+0.0965	0.2917	+0.0160	9.4880	72 10.8	-3.24	9.76	-0.53
July 4	7170	-0.0700	0.3035	0.0319	9.4966	103 31.6	+2.21	9.56	1.01
9	7175	0.2215	0.2445	0.0405	9.5228	132 22.5	5.81	6.43	1.06
14	7180	0.3300	0.1369	0.0411	9.5567	157 24.7	6.86	2.85	0.85
19	7185	0.3872	+0.0072	0.0349	9.5901	178 48.2	6.39	- 0.12	0.59
24	7190	0.3962	-0.1241	0.0250	9.6189	197 19.0	5.37	+ 1.68	0.34
29	7195	0.3646	0.2430	+0.0121	9.6414	213 45.5	4.22	2.82	-0.14
Aug. 3	7200	0.3008	0.3409	-0.0019	9.6572	228 48.5	3.12	3.54	+0.02
8	7205	0.2131	0 4121	0.0157	9.6664	243 1.0	2.08	4.02	0.16
13	7210	-0.1097	0.4527	0.0284	9.6690	256 50.6	+1.05	4.34	0.27
18	7215	+0.0017	0.4605	0.0391	9.6651	270 42.7	-0.01	4.53	0.38
23	7220	0.1125	0.4339	0.0468	9.6546	285 2.8	1.21	4.59	0.50
28	7225	0.2147	0.3725	0.0507	9.6375	300 19.6	2.56	4.43	0.61
Sept. 2	7230	0.2971	0.2777	0.0501	9.6137	317 7.2	4.17	3.90	0.70
7	7235	0.3476	0.1536	0.0441	9.5838	336 8.2	6.00	2.66	0.76
12	7240	+0.3526	-0.0103	-0.0325	9.5498	358 11.9	-7.67	+ 0.23	+0.71

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

MERCURY.

1878.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
		240								
Sept.	17	7245	+0.3000	+0.1339	−0.0156	9.5167	24° 0″.7	− 8.23	− 3.68	+0.42
	22	7250	0.1866	0.2497	+0.0044	9.4933	53 31.1	6.02	8.05	−0.14
	27	7255	+0.0289	0.3058	0.0233	9.4889	85 3.1	− 0.97	10.16	0.77
Oct.	2	7260	−0.1354	0.2871	0.0365	9.5057	115 39.6	+ 4.00	8.53	1.08
	7	7265	0.2713	0.2052	0.0416	9.5362	143 1.0	6.50	4.91	0.99
	12	7270	0.3592	+0.0856	0.0394	9.5707	166 30.0	6.79	− 1.62	0.76
	17	7275	0.3963	−0.0470	0.0315	9.6025	186 37.3	6.01	+ 0.70	0.48
	22	7280	0.3877	0.1747	0.0200	9.6289	204 12.1	4.90	2.21	0.25
	27	7285	0.3421	0.2857	+0.0065	9.6487	220 0.3	3.77	3.15	−0.08
Nov.	1	7290	0.2675	0.3734	−0.0076	9.6617	234 39.1	2.70	3.75	+0.07
	6	7295	0.1725	0.4324	0.0211	9.6682	248 39.2	1.67	4.16	0.20
	11	7300	−0.0650	0.4600	0.0331	9.6682	262 26.8	+ 0.63	4.43	0.32
	16	7305	+0.0473	0.4539	0.0426	9.6616	276 27.1	− 0.48	4.58	0.43
	21	7310	0.1558	0.4131	0.0489	9.6485	291 6.5	1.72	4.55	0.54
	26	7315	0.2512	0.3380	0.0511	9.6286	306 55.6	3.18	4.28	0.64
Dec.	1	7320	0.3222	0.2304	0.0483	9.6022	324 31.8	4.90	3.51	0.73
	6	7325	0.3560	−0.0970	0.0401	9.5703	344 40.9	6.74	+ 1.84	0.76
	11	7330	0.3387	+0.0497	0.0262	9.5359	8 12.3	8.14	− 1.20	0.62
	16	7335	0.2609	0.1853	−0.0078	9.5054	35 36.1	7.75	5.48	+0.23
	21	7340	+0.1264	0.2811	+0.0124	9.4888	66 14.2	− 4.20	9.35	−0.42
	26	7345	−0.0389	0.3071	0.0294	9.4934	97 45.8	+ 1.25	9.90	0.94
	31	7350	0.1955	0.2602	0.0396	9.5170	127 14.2	5.35	7.12	1.08
	36	7355	−0.3135	+0.1595	+0.0415	9.5502	153 0.5	6.82	− 3.58	−0.90

VENUS.

1878.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
		240								
Jan.	0	6985	+0.2590	+0.6727	−0.0049	9.8579	68° 55′.8	− 8.40	−21.80	+0.16
	5	6990	0.1620	0.7017	+0.0011	9.8575	77 0.0	5.27	22.80	−0.04
	10	6995	+0.0619	0.7171	0.0071	9.8572	85 5.0	− 2.01	23.34	0.23
	15	7000	−0.0395	0.7182	0.0129	9.8569	93 10.7	+ 1.28	23.42	0.42
	20	7005	0.1402	0.7050	0.0185	9.8567	101 16.9	4.58	23.02	0.60
	25	7010	0.2380	0.6777	0.0237	9.8566	119 23.6	7.78	22.16	0.78
	30	7015	0.3310	0.6370	0.0284	9.8564	117 30.6	10.83	20.85	0.93
Feb.	4	7020	0.4176	0.5837	0.0326	9.8564	125 37.8	13.67	19.11	1.07
	9	7025	0.4959	0.5187	0.0361	9.8564	133 45.0	16.24	16.98	1.18
	14	7030	0.5641	0.4433	0.0389	9.8564	141 52.2	18.46	14.51	1.27
	19	7035	0.6211	0.3592	0.0410	9.8565	149 59.2	20.31	11.75	1.34
	24	7040	0.6659	0.2679	0.0422	9.8567	158 5.9	21.75	8.75	1.38
March	1	7045	0.6974	0.1712	0.0426	9.8569	166 12.1	22.74	5.58	1.39
	6	7050	0.7150	+0.0712	0.0421	9.8572	174 17.8	23.27	− 2.32	1.37
	11	7055	0.7185	−0.0302	0.0408	9.8575	182 22.8	23.34	+ 0.98	1.32
	16	7060	0.7078	0.1311	0.0387	9.8579	190 27.1	22.93	4.25	1.25
	21	7065	0.6832	0.2293	0.0358	9.8582	198 30.6	22.08	7.41	1.16
	26	7070	0.6451	0.3231	0.0322	9.8586	206 33.2	20.80	10.41	1.04
	31	7075	0.5943	0.4105	0.0280	9.8590	214 34.9	19.10	13.19	0.90
April	5	7080	0.5320	0.4899	0.0232	9.8595	222 35.6	17.04	15.69	0.74
	10	7085	0.4593	0.5597	0.0181	9.8599	230 35.5	14.68	17.89	0.58
	15	7090	0.3775	0.6187	0.0125	9.8603	238 34.5	12.03	19.71	0.40
	20	7095	−0.2886	−0.6656	+0.0067	9.8607	246 32.6	+ 9.17	+21.15	−0.21

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VENUS.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240					° ′ ″			
April 25	7100	−0.1941	−0.6997	+0.0008	9.8610	254 29.9	+ 6.15	+22.19	−0.02
30	7105	−0.0958	0.7203	−0.0052	9.8614	262 26.4	+ 3.03	22.78	+0.16
May 5	7110	+0.0044	0.7271	0.0110	9.8616	270 22.2	− 0.14	22.95	0.35
10	7115	0.1045	0.7198	0.0167	9.8619	278 17.5	3.29	22.69	0.53
15	7120	0.2025	0.6988	0.0220	9.8620	286 12.4	6.38	22.00	0.69
20	7125	0.2967	0.6644	0.0269	9.8622	294 6.9	9.33	20.89	0.85
25	7130	0.3852	0.6172	0.0313	9.8623	302 1.1	12.11	19.40	0.98
30	7135	0.4664	0.5583	0.0351	9.8623	309 55.3	14.66	17.55	1.10
June 4	7140	0.5386	0.4887	0.0382	9.8623	317 49.4	16.92	15.36	1.20
9	7145	0.6005	0.4097	0.0405	9.8622	325 43.7	18.89	12.88	1.27
14	7150	0.6509	0.3229	0.0421	9.8620	333 38.2	20.49	10.16	1.33
19	7155	0.6889	0.2299	0.0430	9.8618	341 33.1	21.72	7.24	1.35
24	7160	0.7137	0.1325	0.0429	9.8616	349 28.5	22.53	4.19	1.36
29	7165	0.7247	−0.0326	0.0421	9.8613	357 24.4	22.93	+ 1.03	1.33
July 4	7170	0.7218	+0.0680	0.0404	9.8610	5 21.0	22.89	− 2.16	1.28
9	7175	0.7049	0.1673	0.0380	9.8606	13 18.4	22.41	5.32	1.21
14	7180	0.6744	0.2633	0.0348	9.8602	21 16.6	21.50	8.39	1.11
19	7185	0.6309	0.3542	0.0310	9.8598	29 15.7	20.16	11.32	0.99
24	7190	0.5751	0.4382	0.0265	9.8594	37 15.6	18.43	14.05	0.85
29	7195	0.5080	0.5137	0.0215	9.8590	45 16.5	16.33	16.52	0.69
Aug. 3	7200	0.4311	0.5791	0.0161	9.8586	53 18.3	13.90	18.67	0.52
8	7205	0.3456	0.6332	0.0103	9.8582	61 21.0	11.17	20 46	0.33
13	7210	0.2534	0.6748	−0.0044	9.8578	69 24.6	8.21	21.88	+0.15
18	7215	0.1562	0.7031	+0.0015	9.8575	77 28.9	5.07	22.85	−0.05
23	7220	+0.0559	0.7176	0.0074	9.8572	85 34.0	− 1.82	23.36	0.24
28	7225	−0.0456	0.7177	0.0133	9.8569	93 39.8	+ 1.49	23.41	0.44
Sept. 2	7230	0.1461	0.7037	0.0188	9.8567	101 46.1	4.77	22.99	0.61
7	7235	0.2437	0.6756	0.0240	9.8565	109 52.8	7.97	22.10	0.79
12	7240	0.3364	0.6342	0.0287	9.8564	117 59.8	11.02	20.76	0.94
17	7245	0.4225	0.5801	0.0328	9.8563	126 7.0	13.84	18.99	1.08
22	7250	0.5001	0.5144	0.0363	9.8564	134 14.3	16.38	16.85	1.19
27	7255	0.5678	0.4385	0.0391	9.8564	142 21.5	18.58	14.35	1.28
Oct. 2	7260	0.6242	0.3539	0.0411	9.8565	150 28.5	20.42	11.57	1.34
7	7265	0.6681	0.2622	0.0422	9.8567	158 35.2	21.83	8.56	1.38
12	7270	0.6988	0.1653	0.0426	9.8569	166 41.4	22.78	5.39	1.39
17	7275	0.7156	+0.0651	0.0420	9.8572	174 47.0	23.29	− 2.12	1.37
22	7280	0.7183	−0.0363	0.0407	9.8575	182 52.0	23.32	+ 1.18	1.32
27	7285	0.7067	0.1371	0.0385	9.8579	190 56.3	22.90	4.44	1.25
Nov. 1	7290	0.6813	0.2352	0.0357	9.8583	198 59.7	22.01	7.60	1.15
6	7295	0.6424	0.3285	0.0320	9.8587	207 2.2	20.70	10.59	1.03
11	7300	0.5909	0.4155	0.0278	9.8591	215 3.8	18.99	13.36	0.89
16	7305	0.5279	0.4944	0.0230	9.8595	223 4.5	16.91	15.84	0.74
21	7310	0.4546	0.5636	0.0177	9.8599	231 4.3	14.52	18.01	0.57
26	7315	0.3725	0.6219	0.0122	9.8603	239 3.2	11.87	19.82	0.39
Dec. 1	7320	0.2831	0.6681	0.0064	9.8607	247 1.2	9.00	21.23	0.20
6	7325	0.1883	0.7014	+0.0004	9.8610	254 58.4	5.97	22.23	−0.01
11	7330	−0.0898	0.7211	−0.0055	9.8614	262 54.9	+ 2.87	22.80	+0.17
16	7335	+0.0104	0.7270	0.0114	9.8617	270 50.8	− 0.33	22.95	0.36
21	7340	0.1104	0.7190	0.0170	9.8619	278 46.1	3.48	22.67	0.54
26	7345	0.2083	0.6971	0.0223	9.8621	286 40.9	6.56	21.94	0.70
31	7350	0.3022	0.6619	0.0272	9.8622	294 35.3	9.50	20.82	0.85
36	7355	+0.3903	−0.6140	−0.0315	9.8623	302 29.6	−12.27	+19.30	+0.99

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

THE EARTH.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 6980	-0.0863	+0.9795	0.0000	9.9927	95° 2″.1	+ 1.21	-13.74	0.00
Jan. 5	6900	0.2583	0.9489		9.9927	105 13.8	3.63	13.31	
15	7000	0.4223	0.8886		9.9929	115 25.1	5.92	12.45	
25	7010	0.5731	0.8008		9.9933	125 35.5	8.00	11.19	
Feb. 4	7020	0.7063	0.6882		9.9940	135 44.5	9.82	9.57	
14	7030	0.8177	0.5546		9.9948	145 51.4	11.31	7.67	
24	7040	0.9041	0.4038		9.9957	155 55.8	12.43	5.55	
March 6	7050	0.9630	0.2409		9.9968	165 57.3	13.14	3.29	
16	7060	0.9929	+0.0707		9.9980	175 55.7	13.43	- 0.96	
26	7070	0.9931	-0.1017		9.9993	185 50.7	13.32	+ 1.36	
April 5	7080	0.9639	0.2710		0.0005	195 42.3	12.82	3.60	
15	7090	0.9062	0.4323		0.0017	205 30.5	11.95	5.70	
25	7100	0.8221	0.5812		0.0029	215 15.5	10.75	7.60	
May 5	7110	0.7142	0.7132		0.0040	224 57.5	9.27	9.26	
15	7120	0.5857	0.8245		0.0049	234 36.7	7.56	10.63	
25	7130	0.4406	0.9125		0.0057	244 13.6	5.65	11.70	
June 4	7140	0.2830	0.9748		0.0064	253 48.5	3.61	12.44	
14	7150	-0.1174	1.0093		0.0069	263 21.8	+ 1.49	12.84	
24	7160	+0.0515	1.0155		0.0071	272 54.2	- 0.65	12.89	
July 4	7170	0.2190	0.9929		0.0072	282 26.4	2.78	12.60	
14	7180	0.3804	0.9426		0.0071	291 58.4	4.83	11.98	
24	7190	0.5311	0.8658		0.0067	301 31.1	6.76	11.03	
Aug. 3	7200	0.6667	0.7646		0.0062	311 5.0	8.52	9.77	
13	7210	0.7835	0.6418		0.0055	320 40.6	10.06	8.24	
23	7220	0.8780	0.5007		0.0046	330 18.2	11.35	6.47	
Sept. 2	7230	0.9473	0.3453		0.0036	339 58.3	12.33	4.50	
12	7240	0.9895	0.1801		0.0025	349 41.2	12.98	2.36	
22	7250	1.0030	-0.0095		0.0013	359 27.3	13.26	+ 0.13	
Oct. 2	7260	0.9872	+0.1613		0.0001	9 16.7	13.17	- 2.15	
12	7270	0.9421	0.3273		9.9988	19 9.5	12.67	4.40	
22	7280	0.8690	0.4835		9.9976	29 5.6	11.79	6.56	
Nov. 1	7290	0.7700	0.6253		9.9965	39 5.1	10.53	8.55	
11	7300	0.6477	0.7482		9.9954	49 7.5	8.92	10.31	
21	7310	0.5055	0.8482		9.9945	59 12.7	7.00	11.76	
Dec. 1	7320	0.3478	0.9222		9.9937	69 20.3	4.85	12.85	
11	7330	0.1795	0.9678		9.9931	79 29.8	2.51	13.54	
21	7340	+0.0056	0.9837		9.9928	89 40.6	- 0.08	13.79	
31	7350	-0.1686	+0.9687	0.0000	9.9927	99 52.2	+ 2.36	-13.59	0.00

MARS.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 6980	+0.9412	+1.1406	+0.0016	0.1699	50° 28′ 17″	-0.51	-0.62	0.00
Jan. 5	6990	0.8350	1.2360	0.0062	0.1737	55 57 46	0.44	0.66	0.00
15	7000	0.7213	1.3204	0.0108	0.1774	61 21 36	0.37	0.68	-0.01
25	7010	0.6013	1.3933	0.0153	0.1812	66 39 53	0.30	0.70	0.01
Feb. 4	7020	0.4763	1.4545	0.0196	0.1849	71 52 45	0.23	0.72	0.01
14	7030	0.3473	1.5037	0.0238	0.1885	77 0 23	0.17	0.72	0.01
24	7040	0.2155	1.5408	0.0277	0.1920	82 3 0	0.10	0.72	0.01
March 6	7050	+0.0821	1.5657	0.0315	0.1954	87 0 51	-0.04	0.72	0.02
16	7060	-0.0520	1.5786	0.0350	0.1986	91 54 10	+0.02	0.71	0.02
26	7070	-0.1857	+1.5797	+0.0383	0.2017	96 43 15	+0.08	-0.69	-0.02

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

MARS.

1878.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
April	5	240 7080	–0.3181	+1.5693	+0.0413	0.2046	101° 28′ 23″	+0.14	–0.68	–0.02
	15	7090	0.4482	1.5475	0.0440	0.2073	106 9 53	0.19	0.66	0.02
	25	7100	0.5753	1.5147	0.0464	0.2098	110 48 1	0.24	0.63	0.02
May	5	7110	0.6983	1.4715	0.0484	0.2121	115 23 7	0.29	0.60	0.02
	15	7120	0.8164	1.4183	0.0501	0.2141	119 55 30	0.33	0.57	0.02
	25	7130	0.9290	1.3555	0.0515	0.2159	124 25 28	0.37	0.54	0.02
June	4	7140	1.0354	1.2836	0.0525	0.2175	128 53 20	0.41	0.50	0.02
	14	7150	1.1350	1.2033	0.0532	0.2188	133 19 27	0.44	0.47	0.02
	24	7160	1.2272	1.1153	0.0536	0.2199	137 44 5	0.48	0.43	0.02
July	4	7170	1.3115	1.0200	0.0536	0.2207	142 7 34	0.51	0.39	0.02
	14	7180	1.3873	1.9180	0.0533	0.2213	146 30 13	0.53	0.35	0.02
	24	7190	1.4543	1.8102	0.0526	0.2216	150 52 21	0.56	0.31	0.02
Aug.	3	7200	1.5120	1.6972	0.0515	0.2216	155 14 17	0.58	0.27	0.02
	13	7210	1.5600	1.5797	0.0502	0.2214	159 36 18	0.60	0.22	0.02
	23	7220	1.5979	1.4585	0.0485	0.2209	163 58 45	0.62	0.18	0.02
Sept.	2	7230	1.6256	1.3343	0.0465	0.2202	168 21 56	0.63	0.13	0.02
	12	7240	1.6428	1.2080	0.0443	0.2192	172 46 9	0.64	0.08	0.02
	22	7250	1.6493	+0.0803	0.0417	0.2180	177 11 44	0.65	–0.03	0.02
Oct.	2	7260	1.6450	–0.0478	0.0388	0.2165	181 39 0	0.65	+0.02	0.02
	12	7270	1.6297	0.1756	0.0357	0.2147	186 8 14	0.65	0.07	0.02
	22	7280	1.6035	0.3023	0.0324	0.2128	190 39 47	0.65	0.12	0.01
Nov.	1	7290	1.5665	0.4270	0.0288	0.2106	195 13 57	0.65	0.18	0.01
	11	7300	1.5186	0.5487	0.0250	0.2082	199 51 3	0.64	0.23	0.01
	21	7310	1.4601	0.6665	0.0211	0.2055	204 31 23	0.62	0.28	0.01
Dec.	1	7320	1.3911	0.7795	0.0170	0.2027	209 15 17	0.61	0.34	0.01
	11	7330	1.3120	0.8869	0.0128	0.1997	214 3 2	0.58	0.39	–0.01
	21	7340	1.2231	0.9876	0.0085	0.1965	218 54 56	0.56	0.45	0.00
	31	7350	–1.1249	–1.0808	+0.0041	0.1931	223 51 15	+0.52	+0.50	0.00

JUPITER.

1878.		Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
		240 6980	+1.28097	–5.02554	–0.01077	0.7148525	284° 18′ 4″	–41.49	+162.77	+0.35
Jan.	5	6990	1.35316	5.00275	0.01248	0.7145430	285 8 13	43.92	162.38	0.40
	15	7000	1.42506	4.97891	0.01419	0.7142335	285 58 26	46.36	161.95	0.46
	25	7010	1.49666	4.95400	0.01590	0.7139241	286 48 44	48.79	161.49	0.52
Feb.	4	7020	1.56793	4.92803	0.01760	0.7136147	287 39 5	51.22	160.99	0.58
	14	7030	1.63886	4.90101	0.01930	0.7133052	288 29 31	53.65	160.45	0.64
	24	7040	1.70944	4.87293	0.02100	0.7129958	289 20 1	56.08	159.87	0.69
Mar.	6	7050	1.77964	4.84381	0.02269	0.7126868	290 10 35	58.51	159.26	0.75
	16	7060	1.84946	4.81365	0.02438	0.7123780	291 1 14	60.94	158.61	0.80
	26	7070	1.91889	4.78244	0.02606	0.7120696	291 51 56	63.36	157.91	0.86
April	5	7080	1.98790	4.75020	0.02773	0.7117616	292 42 44	65.78	157.18	0.92
	15	7090	2.05649	4.71693	0.02940	0.7114541	293 33 35	68.19	156.41	0.98
	25	7100	2.12461	4.68264	0.03106	0.7111473	294 24 31	70.60	155.60	1.04
May	5	7110	2.19228	4.64732	0.03272	0.7108414	295 15 31	73.00	154.76	1.10
	15	7120	2.25948	4.61099	0.03437	0.7105362	296 6 36	75.40	153.87	1.15
	25	7130	+2.32619	–4.57365	–0.03601	0.7102319	296 57 45	–77.79	+152.94	+1.20

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

JUPITER.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
June 4	240 7140	+2.39239	-4.53531	-0.03764	0.7099284	297° 48′ 59″	-80.17	+151.98	+1.26
14	7150	2.45807	4.49597	0.03927	0.7096257	298 40 17	82.54	150.98	1.32
24	7160	2.52320	4.45564	0.04089	0.7093242	299 31 39	84.91	149.94	1.38
July 4	7170	2.58778	4.41433	0.04250	0.7090240	300 23 6	87.27	148.85	1.44
14	7180	2.65179	4.37204	0.04410	0.7087248	301 14 37	89.61	147.73	1.50
24	7190	2.71521	4.32878	0.04569	0.7084269	302 6 12	91.94	146.58	1.55
Aug. 3	7200	2.77802	4.28457	0.04727	0.7081304	302 57 51	94.26	145.38	1.61
13	7210	2.84021	4.23941	0.04883	0.7078354	303 49 34	96.57	144.14	1.67
23	7220	2.90177	4.19330	0.05039	0.7075419	304 41 20	98.86	142.86	1.72
Sept. 2	7230	2.96268	4.14626	0.05194	0.7072498	305 33 12	101.14	141.54	1.78
12	7240	3.02293	4.09829	0.05348	0.7069591	306 25 8	103.40	140.18	1.83
22	7250	3.08249	4.04940	0.05500	0.7066701	307 17 8	105.65	138.79	1.89
Oct. 2	7260	3.14136	3.99961	0.05651	0.7063827	308 9 11	107.88	137.35	1.94
12	7270	3.19952	3.94891	0.05800	0.7060970	309 1 19	110.09	135.88	2.00
22	7280	3.25697	3.89731	0.05949	0.7058131	309 53 31	112.29	134.37	2.05
Nov. 1	7290	3.31368	3.84483	0.06096	0.7055311	310 45 48	114.47	132.82	2.11
11	7300	3.36964	3.79148	0.06242	0.7052511	311 38 8	116.63	131.23	2.16
21	7310	3.42484	3.73727	0.06386	0.7049733	312 30 33	118.77	129.60	2.22
Dec. 1	7320	3.47926	3.68221	0.06529	0.7046976	313 23 2	120.88	127.93	2.27
11	7330	3.53289	3.62630	0.06670	0.7044241	314 15 34	122.98	126.23	2.32
21	7340	3.58572	3.56957	0.06810	0.7041528	315 8 11	125.05	124.49	2.37
31	7350	+3.63773	-3.51202	-0.06948	0.7038837	316 0 52	-127.10	+122.71	+2.43

SATURN.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
	240 6980	+9.47776	-1.59826	-0.35350	0.98309	350° 27′ 9″	-14.40	+2.43	+0.54
Jan. 5	6990	9.48388	1.54323	0.35466	0.98296	350 46 55	14.42	2.35	0.54
15	7000	9.48968	1.48815	0.35581	0.98282	351 6 42	14.45	2.27	0.55
25	7010	9.49517	1.43303	0.35694	0.98269	351 26 29	14.47	2.19	0.55
Feb. 4	7020	9.50033	1.37786	0.35806	0.98256	351 46 17	14.49	2.10	0.55
14	7030	9.50518	1.32264	0.35918	0.98243	352 6 6	14.51	2.02	0.55
24	7040	9.50971	1.26737	0.36028	0.98230	352 25 56	14.53	1.94	0.55
March 6	7050	9.51392	1.21206	0.36137	0.98216	352 45 47	14.55	1.86	0.56
16	7060	9.51781	1.15671	0.36244	0.98203	353 5 38	14.57	1.77	0.56
26	7070	9.52139	1.10132	0.36351	0.98190	353 25 30	14.59	1.69	0.56
April 5	7080	9.52464	1.04589	0.36456	0.98177	353 45 23	14.61	1.60	0.56
15	7090	9.52757	0.99043	0.36560	0.98163	354 5 16	14.63	1.52	0.56
25	7100	9.53018	0.93493	0.36663	0.98150	354 25 10	14.64	1.43	0.57
May 5	7110	9.53246	0.87940	0.36765	0.98137	354 45 5	14.66	1.35	0.57
15	7120	9.53443	0.82384	0.36866	0.98123	355 5 1	14.68	1.27	0.57
25	7130	9.53607	0.76826	0.36965	0.98110	355 24 57	14.69	1.18	0.57
June 4	7140	9.53739	0.71265	0.37063	0.98096	355 44 54	14.71	1.10	0.58
14	7150	9.53838	0.65701	0.37159	0.98083	356 4 52	14.72	1.01	0.58
24	7160	9.53905	0.60135	0.37254	0.98070	356 24 51	14.74	0.93	0.58
July 4	7170	9.53939	0.54567	0.37348	0.98056	356 44 50	14.75	0.85	0.58
14	7180	9.53941	0.48997	0.37441	0.98043	357 4 50	14.77	0.76	0.58
24	7190	+9.53911	-0.43425	-0.37532	0.98029	357 24 51	-14.78	+0.68	+0.58

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

SATURN.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
Aug. 3	240 7200	+9.53848	−0.37852	−0.37622	0.98016	357° 44′ 53″	−14.79	+0.59	+0.59
13	7210	9.53752	0.32278	0.37711	0.98002	358 4 55	14.80	0.50	0.59
23	7220	9.53624	0.26702	0.37799	0.97989	358 24 58	14.82	0.42	0.59
Sept. 2	7230	9.53463	0.21126	0.37885	0.97975	358 45 2	14.83	0.33	0.59
12	7240	9.53270	0.15549	0.37970	0.97962	359 5 7	14.84	0.24	0.59
22	7250	9.53044	0.09971	0.38054	0.97948	359 25 12	14.85	0.16	0.60
Oct. 2	7260	9.52785	−0.04393	0.38137	0.97935	359 45 18	14.86	+0.07	0.60
12	7270	9.52494	+0.01186	0.38218	0.97921	0 5 25	14.87	−0.02	0.60
22	7280	9.52170	0.06765	0.38298	0.97908	0 25 33	14.88	0.11	0.60
Nov. 1	7290	9.51813	0.12343	0.38376	0.97894	0 45 41	14.89	0.19	0.60
11	7300	9.51423	0.17921	0.38453	0.97881	1 5 51	14.89	0.28	0.61
21	7310	9.51001	0.23498	0.38529	0.97867	1 26 1	14.90	0.37	0.61
Dec. 1	7320	9.50546	0.29074	0.38604	0.97853	1 46 11	14.91	0.46	0.61
11	7330	9.50058	0.34648	0.38677	0.97840	2 6 23	14.92	0.55	0.61
21	7340	9.49538	0.40221	0.38749	0.97826	2 26 35	14.92	0.64	0.61
31	7350	9.48985	0.45793	0.38819	0.97812	2 46 48	14.93	0.72	0.61
	7360	+9.48399	+0.51364	−0.38888	0.97799	3 7 2	−14.93	−0.81	+0.62

URANUS.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 6960	−15.27890	+11.13965	+0.23654	1.26337	142° 25′ 54″	+0.47	−0.31	−0.01
Jan. 15	7000	15.36643	10.00099	0.23714	1.26330	146 56 38	0.47	0.31	0.01
Feb. 24	7040	15.45287	9.86160	0.23770	1.26324	147 27 23	0.48	0.30	0.01
Apr. 5	7080	15.53814	9.72147	0.23826	1.26317	147 58 9	0.48	0.30	0.01
May 15	7120	15.62219	9.58061	0.23880	1.26310	148 28 55	0.48	0.30	0.01
June 24	7160	15.70504	9.43902	0.23932	1.26304	148 59 41	0.49	0.29	0.01
Aug. 3	7200	15.78672	9.29672	0.23983	1.26298	149 30 27	0.49	0.29	0.01
Sept. 12	7240	15.86719	9.15373	0.24032	1.26292	150 1 14	0.49	0.28	0.01
Oct. 22	7280	15.94644	9.01003	0.24079	1.26286	150 32 2	0.49	0.28	0.01
Dec. 1	7320	16.02447	8.86566	0.24123	1.26281	151 2 50	0.50	0.27	0.01
Jan. 10	7360	−16.10130	+ 8.72061	+0.24165	1.26276	151 33 38	+0.50	−0.27	−0.01

NEPTUNE.

1878.	Julian Day.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
	240 6960	+24.0184	+17.6430	−0.9249	1.47445	36° 18′ 6″	−0.23	−0.17	+0.01
Jan. 15	7000	23.9433	17.7450	0.9252	1.47446	36 32 42	0.23	0.17	0.01
Feb. 24	7040	23.8678	17.8467	0.9254	1.47446	36 47 17	0.23	0.17	0.01
Apr. 5	7080	23.7919	17.9480	0.9257	1.47446	37 1 53	0.23	0.17	0.01
May 15	7120	23.7156	18.0490	0.9259	1.47446	37 16 29	0.23	0.17	0.01
June 24	7160	23.6388	18.1497	0.9261	1.47447	37 31 5	0.22	0.17	0.01
Aug. 3	7200	23.5616	18.2501	0.9263	1.47447	37 45 42	0.22	0.17	0.01
Sept. 12	7240	23.4840	18.3502	0.9265	1.47447	38 0 18	0.22	0.17	0.01
Oct. 22	7280	23.4059	18.4500	0.9266	1.47447	38 14 54	0.22	0.18	0.01
Dec. 1	7320	+23.3274	+18.5495	−0.9268	1.47448	38 29 31	−0.22	−0.18	+0.01

NOTE.—The Epoch is the 2,405,000th day of the Julian Period = 1872, July 25.

INCLINATIONS AND NODES.

Planet.	Inclination.	Increase in 100 Days.		Longitude of Ascending Node.	Increase in 100 Days.	
	i	Δi	$\Delta' i$	☊	Δ ☊	Δ' ☊
Mercury . .	7° 0′ 9″.8	+0″.01947	−0″.05777	46° 49′ 3″.1	+11″.644	−1″.271
Venus . . .	3 23 35.9	+0.01514	−0.00772	75 32 6.8	8.904	−2.705
Mars . . .	1 51 1.8	−0.00586	−0.07991	48 34 1.9	7.585	−2.905
Jupiter . .	1 18 35.4	−0.06189	−0.02747	99 7 15.4	9.397	+1.075
Saturn . . .	2 29 19.9	−0.03825	+0.02400	112 30 53.2	8.398	−2.760
Uranus . .	0 46 21.1	+0.00688	−0.01613	73 21 7.0	5.080	+0.885
Neptune . .	1 46 54.7	−0.09020	+0.00364	130 22 29.7	+10.885	−0.031

Note.—The Epoch is the 2405,000th day of the Julian Period = 1872, July 25.

Δi and Δ ☊ refer to the moving ecliptic and equinox.
$\Delta' i$ and Δ' ☊ refer to the ecliptic and equinox of the epoch.

MASSES. Sun's = 1.

Planet.	Mass.	Log. of Mass.	Authority.
Mercury . .	$\frac{1}{4865751}$ =.000 000 206	93.31285	Encke, *A. N.*, No. 443.
Venus . . .	$\frac{1}{390000}$ =.000 002 564	94.40893	Le Verrier, *Théor. de Merc.*, p. 115.
The Earth .	$\frac{1}{354936}$ =.000 002 817	94.44985	Le Verrier, *Théor. de Merc.*, p. 26.
Mars . . .	$\frac{1}{2680637}$ =.000 000 373	93.57176	Burckhardt, *Conn. des Temps.*, 1816, p. 343.
Jupiter . .	$\frac{1}{1047.879 \pm .235}$ =.000 954 308	96.979689	Bessel, *Die Masse des Jupiter*, p. 64.
Saturn . . .	$\frac{1}{3501.6}$ =.000 285 584	96.455733	Bessel, *Comptes Rendus*, 1841.
Uranus . .	$\frac{1}{24905}$ =.000 040 153	95.60371	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune . .	$\frac{1}{18780}$ =.000 053 248	95.72630	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

ECLIPSES IN 1878.

In the year 1878 there will be four Eclipses, two of the Sun and two of the Moon, and a Transit of Mercury over the Sun's disc.

I. An Annular Eclipse of the Sun, February 1, 1878, invisible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, February 1ᵈ 14ʰ 35ᵐ 37ˢ.0.

Sun and Moon's R. A.	21ʰ 3ᵐ 26ˢ.73	Hourly Motions	10ˢ.16 and 117ˢ.35
Sun's Declination	−16° 48′ 50″.3	Hourly Motion	+ ′ 43″.5
Moon's Declination	−17 42 1.5	" "	+11 11.5
Sun's Equa. Hor. Par.	9.0	True Semidiameter	16 13.6
Moon's Equa. Hor. Par.	54 24.3	" "	14 48.8

From these elements may be deduced the following results:—

Eclipse begins on the Earth February 1ᵈ 12ʰ 48ᵐ.0, Washington mean time, in longitude 56° 56′.7 East from Washington, and in latitude 53° 55′.8 South.

Central Eclipse begins on the Earth 14ʰ 30ᵐ.7, in longitude 26° 29′.0 West from Washington, and in latitude 73° 2′.6 South.

Central Eclipse at Noon 14ʰ 35ᵐ.7, in longitude 35° 25′.2 West from Washington, and in latitude 83° 41′.9 South.

Central Eclipse ends on the Earth 16ʰ 8ᵐ.7, in longitude 133° 30′.6 West from Washington, and in latitude 40° 54′.6 South.

Eclipse ends on the Earth 17ʰ 51ᵐ.1, in longitude 170° 28′.3 West from Washington, and in latitude 12° 25′.5 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	−9.46	−9.45	° ′ ″
12 40	−0.90697	−0.77922	−1.92300	0355	1602	8553	4930	186 30 25.9
12 50	0.82851	0.74716	1.89098	0360	1607	8506	4881	189 0 25.8
13 0	0.75006	0.71509	1.85895	0364	1611	8458	4831	191 30 25.8
13 10	0.67161	0.68302	1.82692	0369	1615	8410	4782	194 0 25.8
13 20	0.59316	0.65095	1.79488	0373	1620	8363	4733	196 30 25.8
13 30	0.51471	0.61887	1.76284	0378	1624	8315	4683	199 0 25.8
13 40	0.43626	0.58679	1.73079	0382	1628	8267	4634	201 30 25.8
13 50	0.35782	0.55470	1.69873	0387	1633	8220	4585	204 0 25.8
14 0	0.27938	0.52260	1.66666	0391	1637	8172	4536	206 30 25.8
14 10	0.20094	0.49049	1.63458	0396	1641	8124	4486	209 0 25.8
14 20	0.12250	0.45838	1.60250	0400	1646	8077	4437	211 30 25.8
14 30	−0.04407	0.42626	1.57041	0405	1650	8029	4388	214 0 25.7
14 40	+0.03436	0.39413	1.53831	0409	1655	7981	4338	216 30 25.7
14 50	0.11279	0.36200	1.50620	0414	1659	7934	4289	219 0 25.7
15 0	0.19121	0.32986	1.47408	0418	1663	7886	4240	221 30 25.7
15 10	0.26963	0.29772	1.44195	0423	1668	7838	4190	224 0 25.7
15 20	0.34805	0.26557	1.40982	0427	1672	7790	4141	226 30 25.7
15 30	0.42646	0.23341	1.37768	0432	1676	7743	4091	229 0 25.7
15 40	0.50487	0.20125	1.34553	0436	1681	7695	4042	231 30 25.7
15 50	0.58328	0.16908	1.31338	0441	1685	7647	3993	234 0 25.6
16 0	0.66168	0.13690	1.28122	0445	1689	7600	3943	236 30 25.6
16 10	0.74008	0.10472	1.24905	0450	1694	7552	3894	239 0 25.6
16 20	0.81847	0.07253	1.21687	0454	1698	7504	3844	241 30 25.6
16 30	0.89686	0.04033	1.18469	0459	1702	7456	3795	244 0 25.6
16 40	0.97524	−0.00813	1.15250	0463	1707	7409	3746	246 30 25.6
16 50	+1.05362	+0.02408	−1.12030	0468	1711	7361	3696	249 0 25.6

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	−9.46	−9.45	° ′ ″
17 0	+1.13200	+0.05629	−1.08809	0472	1715	7313	3647	251 30 25.6
17 10	1.21037	0.08851	1.05588	0477	1720	7265	3597	254 0 25.6
17 20	1.28873	0.12074	1.02366	0481	1724	7218	3548	256 30 25.5
17 30	1.36708	0.15297	0.99143	0486	1728	7170	3498	259 0 25.5
17 40	1.44543	0.18521	0.95920	0490	1733	7122	3449	261 30 25.5
17 50	1.52377	0.21746	0.92696	0495	1737	4074	3400	264 0 25.5
18 0	+1.60211	+0.24971	−0.89471	0499	1742	7026	3350	266 30 25.5

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
14 30	−0.97231	−1.02435	15 20	−0.81163	−0.86377
14 40	0.94019	0.99225	15 30	0.77946	0.83163
14 50	0.90806	0.96014	15 40	0.74730	0.79948
15 0	0.87592	0.92802	15 50	0.71513	0.76733
15 10	0.84378	0.89590	16 0	0.68295	0.73517
15 20	−0.81163	−0.86377	16 10	−0.65077	−0.70300

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from the corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000003, and by numerically decreasing log G by 0.000030, and increasing log H by 0.000035.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.*

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
12 30	+7845.7	+3204.2	+3199.8	+130.76	+53.40	+53.33
13 0	7845.3	3206.2	3202.3	130.75	53.44	53.37
13 30	7844.7	3208.2	3204.8	130.74	53.47	53.41
14 0	7844.0	3210.3	3207.3	130.73	53.50	53.45
14 30	7843.2	3212.3	3209.7	130.72	53.54	53.49
15 0	7842.3	3214.2	3212.0	130.70	53.57	53.53
15 30	7841.2	3216.0	3214.3	130.69	53.60	53.57
16 0	7840.0	3217.9	3216.6	130.67	53.63	53.61
16 30	7838.7	3219.8	3218.8	130.64	53.66	53.65
17 0	7837.1	3221.7	3220.9	130.62	53.69	53.68
17 30	7835.2	3223.7	3223.0	130.59	53.73	53.72
18 0	+7833.1	+3225.6	+3225.0	+130.55	+53.76	+53.75

II. A Partial Eclipse of the Moon, February 16, 1878, partly visible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, February 16ᵈ 18ʰ 31ᵐ 16ˢ.4.

	h m s		s
Sun's Right Ascension	22 3 30.18	Hourly Motion	9.66
Moon's Right Ascension	10 3 30.18	" "	140.17
	° ′ ″		′ ″
Sun's Declination	−11 55 31.2	Hourly Motion	+ 0 52.6
Moon's Declination	+11 16 52.8	" "	−16 28.2
Sun's Equa. Hor. Par.	8.9	True Semidiameter	16 10.9
Moon's Equa. Hor. Par.	61 19.2	" "	16 41.8

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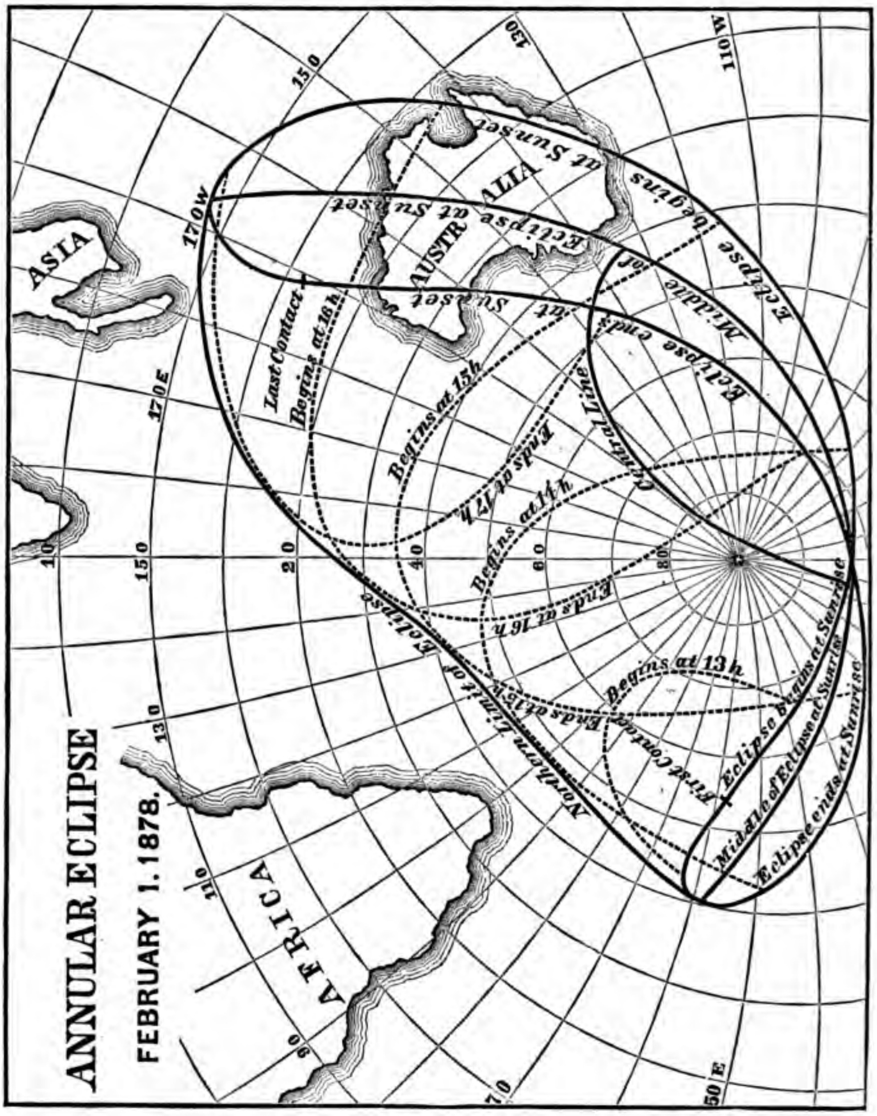
* In units of the sixth place of decimals.

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE OF THE ANNULAR ECLIPSE OF FEBRUARY 1, 1878.



From these elements may be deduced the following results:—

	d	h	m	
Moon enters Penumbra February	16	15	33.4	Washington mean time.
Moon enters Shadow	16	16	34.7	" "
Middle of Eclipse	16	18	2.9	" "
Moon leaves Shadow	16	19	31.0	" "
Moon leaves Penumbra	16	20	32.3	" "

First contact of Shadow with Moon's limb 82° from the north point towards the East, when the Moon is in the zenith, in longitude 66° 10′ West from Washington, and in latitude 11° 49′ North.

Last contact of Shadow with Moon's limb 31° from the north point towards the West, when the Moon is in the zenith, in longitude 108° 50′ West from Washington, and in latitude 11° 6′ North.

Magnitude of the Eclipse = 0.840 (Moon's diameter = 1).

III. A Total Eclipse of the Sun, July 29, 1878, visible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, July 29^{d} 4^{h} 14^{m} 34^{s}.7.

Sun and Moon's R. A.	8^{h} 35^{m} 45^{s}.98	Hourly Motions	9^{s}.78 and 143^{s}.98
Sun's Declination	+18° 38′ 57″.6	Hourly Motion	− 0′ 35″.9
Moon's Declination	+19 18 27.3	" "	−12 11.1
Sun's Equa. Hor. Par.	8.7	True Semidiameter	15 45.5
Moon's Equa Hor. Por.	59 38.6	" "	16 14.4

From these elements may be deduced the following results:—

Eclipse begins on the Earth July 29^{d} 2^{h} 10^{m}.0, Washington mean time, in longitude 138° 14′.4 West from Washington, and in latitude 41° 20′.0 North.

Central Eclipse begins on the Earth 3^{h} 16^{m}.3, in longitude 165° 27′.9 West from Washington, and in latitude 54° 14′.1 North.

Central Eclipse at Noon 4^{h} 16^{m}.6, in longitude 62° 5′.6 West from Washington, and in latitude 60° 32′.0 North.

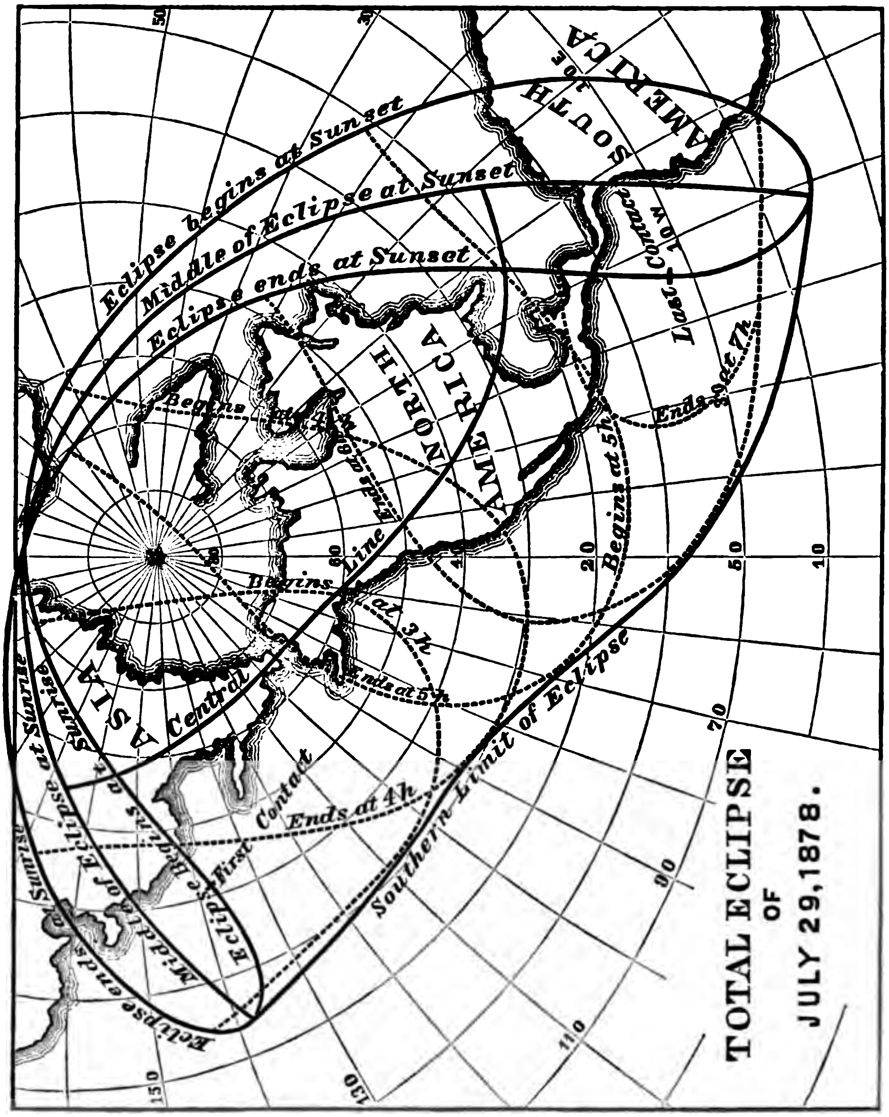
Central Eclipse ends on the Earth 6^{h} 1^{m}.5, in longitude 7° 16′.6 East from Washington, and in latitude 17° 31′.1 North.

Eclipse ends on the Earth 7^{h} 7^{m}.6, in longitude 14° 8′.7 West from Washington, and in latitude 3° 34′.2 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.97	9.97	+9.49	+9.51	° ′ ″
2 10	−1.10513	+1.60584	+0.52995	7205	5853	9289	1134	30 56 38.7
2 20	1.01643	1.57345	0.49758	7209	5857	9253	1099	33 26 39.7
2 30	0.92772	1.54106	0.46520	7213	5861	9217	1064	35 56 40.8
2 40	0.83901	1.50865	0.43281	7217	5866	9181	1029	38 26 41.8
2 50	0.75031	1.47623	0.40041	7221	5870	9145	0994	40 56 42.8
3 0	0.66160	1.44380	0.36800	7225	5874	9108	0959	43 26 43.8
3 10	0.57289	1.41136	0.33558	7229	5878	9072	0923	45 56 44.8
3 20	0.48419	1.37891	0.30315	7233	5882	9036	0888	48 26 45.8
3 30	0.39548	1.34645	0.27072	7237	5886	9000	0853	50 56 46.8
3 40	0.30677	1.31399	0.23827	7241	5890	8964	0818	53 26 47.8
3 50	0.21807	1.28151	0.20582	7245	5894	8928	0783	55 56 48.8
4 0	0.12937	1.24902	0.17336	7249	5899	8891	0748	58 26 49.9
4 10	−0.04067	1.21652	0.14089	7253	5903	8855	0713	60 56 50.9
4 20	+0.04803	1.18401	0.10841	7257	5907	8819	0678	63 26 51.9
4 30	0.13673	1.15150	0.07593	7261	5911	8783	0643	65 56 52.9
4 40	0.22543	1.11897	0.04343	7265	5915	8747	0608	68 26 53.9
4 50	+0.31412	+1.08644	+0.01093	7269	5919	8711	0573	70 56 54.9

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE OF THE TOTAL ECLIPSE OF JULY 29, 1878.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log. E.	log. F.	log. G.	log. H.	μ
h m				9.97	9.97	+9.49	+9.51	
5 0	+0.40282	+1.05390	−0.02158	7273	5923	8674	0537	73° 26′ 55″.9
5 10	0.49151	1.02135	0.05410	7277	5927	8638	0502	75 56 56.9
5 20	0.58020	0.98879	0.08663	7281	5931	8602	0467	78 26 57.9
5 30	0.66888	0.95622	0.11916	7285	5936	8566	0432	80 56 59.0
5 40	0.75756	0.92364	0.15170	7289	5940	8530	0397	83 27 0.0
5 50	0.84624	0.89105	0.18425	7293	5944	8493	0362	85 57 1.0
6 0	0.93492	0.85845	0.21680	7297	5948	8457	0327	88 27 2.0
6 10	1.02359	0.82584	0.24936	7301	5952	8421	0292	90 57 3.0
6 20	1.11226	0.79322	0.28193	7305	5956	8385	0256	93 27 4.0
6 30	1.20092	0.76060	0.31451	7309	5960	8348	0221	95 57 5.0
6 40	1.28958	0.72796	0.34710	7313	5964	8312	0186	98 27 6.0
6 50	1.37823	0.69532	0.37969	7317	5969	8276	0151	100 57 7.0
7 0	1.46687	0.66267	0.41229	7321	5973	8240	0116	103 27 8.0
7 10	+1.55551	+0 63001	−0.44490	7325	5977	8204	0081	105 57 9.1

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
3 10	+0.86546	+0.88148	4 40	+0.57308	+0.58932
3 20	0.83301	0.84905	4 50	0.54055	0.55682
3 30	0.80056	0.81661	5 0	0.50801	0.52431
3 40	0.76810	0.78416	5 10	0.47546	0.49179
3 50	0.73562	0.75171	5 20	0.44290	0.45926
4 0	0.70313	0.71925	5 30	0.41033	0.42673
4 10	0.67063	0.68678	5 40	0.37775	0.39419
4 20	0.63812	0.65430	5 50	0.34516	0.36164
4 30	0.60561	0.62182	6 0	0.31256	0.32908
4 40	+0.57308	+0.58932	6 10	+0.27995	+0.29651

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from the corresponding values for Penumbra, by numerically decreasing log E and increasing log F by 0.000003, and by numerically increasing log G by 0.000030, and decreasing log H by 0.000029.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.*

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h m						
2 0	+8870.6	−3237.3	−3236.0	+147.84	−53.95	−53.93
2 30	8870.7	3240.3	3238.7	147.84	54.00	53.98
3 0	8870.7	3243.3	3241.4	147.84	54.05	54.02
3 30	8870.5	3246.3	3244.0	147.84	54.10	54.07
4 0	8870.2	3249.2	3246.5	147.84	54.15	54.11
4 30	8869.8	3252.0	3249.0	147.83	54.20	54.15
5 0	8869.2	3254.8	3251.4	147.82	54.25	54.19
5 30	8868.3	3257.5	3253.7	147.80	54.29	54.23
6 0	8867.2	3260.3	3256.0	147.79	54.34	54.27
6 30	8865.8	3263.0	3258.2	147.76	54.38	54.30
7 0	8864.2	3265.7	3260.4	147.74	54.43	54.34
7 30	+8862.5	−3268.4	−3262.6	+147.71	−54.47	−54.38

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* In units of the sixth place of decimals.

IV. A Partial Eclipse of the Moon, August 12, 1878, partly visible at Washington, with the following elements:

Washington mean time of ☍ in Right Ascension, August $12^d\ 7^h\ 35^m\ 13^s.6$.

	h m s		s
Sun's Right Ascension	9 30 3.04	Hourly motion	9.42
Moon's Right Ascension	21 30 3.04	" "	115.92
	° ′ ″		′ ″
Sun's declination	+14 47 34.2	Hourly motion	− 0 45.5
Moon's declination	−14 6 55.2	" "	+12 18.4
Sun's Equa. Hor. Par.	8.7	True Semidiameter	15 47.6
Moon's Equa. Hor. Par.	54 56.5	" "	14 57.6

From these elements may be deduced the following results:

		d	h	m	
Moon enters Penumbra	August	12	4	14.4	Washington mean time.
Moon enters Shadow		12	5	34.3	" "
Middle of Eclipse		12	7	0.3	" "
Moon leaves Shadow		12	8	26.2	" "
Moon leaves Penumbra		12	9	46.1	" "

First contact of Shadow with Moon's limb 109° from the north point towards the East, when the Moon is in the zenith, in longitude 96° 43′ East from Washington, and in latitude 14° 32′ South.

Last contact of Shadow with Moon's limb 156° from the north point towards the West, when the Moon is in the zenith, in longitude 55° 1′ East from Washington, and in latitude 13° 56′ South.

Magnitude of the Eclipse = 0.596 (Moon's diameter = 1).

V. A Transit of Mercury over the Sun's disc, May 5–6, 1878, visible at Washington, with the following elements:

Washington mean time of ☌ in Right Ascension, May $6^d\ 1^h\ 16^m\ 44^s.2$.

	h m s		s s
Sun and Mercury's R. A.	2 54 20.46	Hourly Motions	+9.67 and −5.27
	° ′ ″		′ ″
Sun's Declination	+16 39 18.3	Hourly Motion	+ 0 41.8
Mercury's Declination	+16 44 39.6	" "	− 1 8.1
Sun's Equa. Hor. Par.	8.76	True Semidiameter	15 50.78
Mercury's Equa. Hor. Par.	15.86	" "	5.99

From these elements may be deduced the following times of phases at the centre of the Earth:

		d	h	m	s	
Ingress, Exterior Contact,	May	5	22	5	59	Washington mean time.
Ingress, Interior Contact		5	22	9	6	" "
Middle of Transit		6	1	53	12	" "
Egress, Interior Contact		6	5	37	18	" "
Egress, Exterior Contact		6	5	40	25	" "

First contact of Mercury with Sun's limb 45° from the north point towards the East, when the Sun is in the zenith, in longitude 27° 37′.3 East from Washington, and in latitude 16° 37′.1 North.

Last contact of Mercury with Sun's limb 100° from the north point towards the West, when the Sun is in the zenith, in longitude 85° 59′.7 West from Washington, and in latitude 16° 42′.4 North.

The Washington Mean Time of exterior contact at Ingress and Egress for any point on the surface of the Earth may be computed from the following formulæ, in which R is the radius of the Earth at the place, θ the geocentric North latitude, and λ the longitude West from Washington:—

$$\text{Ingress,}\quad 22^h\ 5^m\ 58^s.7 - 74^s.34\,R\sin\theta - 82^s.55\,R\cos\theta\cos(\lambda - 45^\circ\ 55'.1),$$

$$\text{Egress,}\quad 5\ 40\ 25.1 - 18.26\,R\sin\theta - 109.58\,R\cos\theta\cos(\lambda + 6\ 15.2).$$

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's— Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	At Conjunction in R. A. Washington Mean Time.	Hour Angle H	Y	x′	y′	Limiting Parallels. N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
43 Ophiuchi	6	−0.69	− 5.6	−28 1.4	**1** 1 39.8	+ 3 9.2	+0.3781	.5723	−.0375	+37	−22
B. A. C. 7202	6	0.41	7.4	18 38.9	20 33.2	− 5 8.3	−1.1553	.5222	+.1896	−32	−90
B. A. C. 7209	6½	0.41	7.3	18 29.2	21 0.9	− 4 41.4	−1.2454	.5219	.1903	−41	−90
19 Capricorni	6	0.39	7.4	18 23.1	23 44.5	− 2 2.9	−0.8339	.5198	.1943	− 9	−90
20 Capricorni	6	0.38	7.5	19 30.5	**5** 2 7.6	+ 0 15.9	+0.8676	.5181	.1977	+71	+ 4
21 Capricorni	6	−0.38	− 7.2	−18 0.4	2 47.5	+ 0 54.5	−0.6506	.5176	+.1986	+ 2	−89
θ Capricorni	4	0.36	7.1	17 43.1	5 21.6	+ 3 23.9	−0.4539	.5157	.2021	+12	−72
31 Capricorni	6½	0.32	6.9	17 58.4	11 40.0	+ 9 31.2	+1.1267	.5114	.2100	+72	+22
ι Capricorni	4½	0.31	6.7	17 21.3	13 44.3	+11 31.8	+0.8835	.5100	.2125	+73	+ 4
42 Capricorni	6	0.24	5.8	14 35.5	23 56.1	− 2 34.3	+0.0619	.5035	.2234	+42	−41
44 Capricorni	6	−0.25	− 5.9	−14 57.5	**6** 0 43.9	− 1 47.8	+0.6456	.5031	+.2242	+75	−10
45 Capricorni	6	0.23	6.0	15 18.7	1 14.0	− 1 18.7	+1.1468	.5028	.2247	+75	+22
μ Capricorni	5	0.21	5.5	14 7.6	6 12.1	+ 3 31.3	+0.9669	.4997	.2295	+76	+ 9
B. A. C. 7697	6½	0.16	4.6	11 2.5	14 2.4	+11 8.5	−0.6583	.4957	.2356	+ 6	−88
$ε^1$ Aquarii	6	0.15	4.7	11 25.3	15 38.4	−11 18.5	+0.1755	.4949	.2368	+50	−35
$ε^2$ Aquarii	6	−0.14	− 4.8	−12 9.9	15 41.0	−11 16.0	+1.0093	.4949	+.2368	+78	+11
B. A. C. 7774	6	0.14	4.1	9 38.9	19 9.8	− 7 52.9	−0.9467	.4933	.2391	− 9	−90
Venus				10 45.9	19 46.2	+ 7 42.5	+0.4324	.4676	.2228	+65	−21
67 Aquarii	6	0.04	2.8	7 36.0	**7** 9 54.9	+ 6 29.1	+0.3747	.4876	.2473	+63	−24
B. A. C. 7986	6	−0.01	1.9	5 38.3	16 42.2	−10 55.4	−0.1143	.4856	.2499	+37	−50
B. A. C. 8094	6	+0.08	− 0.9	− 4 9.5	**8** 4 21.3	+ 0 25.2	+1.1773	.4833	+.2530	+86	+22
11 Piscium	6½	0.14	+ 0.1	2 27.7	12 19.7	+ 8 11.0	+1.3176	.4827	.2541	+88	+35
14 Piscium	6	0.16	0.4	− 1 55.3	15 1.1	+10 48.1	+1.4022	.4826	.2543	+88	+48
15 Piscium	6½	0.14	1.2	+ 0 38.3	15 48.1	+11 33.9	−1.2348	.4826	.2543	−27	−90
λ Piscium	5	0.18	1.6	1 6.6	19 34.7	− 8 45.4	−0.7956	.4826	.2543	+ 3	−75
B. A. C. 8276	6½	+0.21	+ 2.0	+ 1 32.3	23 26.9	− 4 59.3	−0.2870	.4827	+.2541	+30	−60
21 Piscium	6	0.22	1.6	0 24.0	23 49.0	− 4 37.8	+1.0678	.4828	.2541	+90	+14
22 Piscium	6	0.21	2.3	2 15.2	**9** 1 15.2	− 3 13.9	−0.6199	.4830	.2540	+12	−83
25 Piscium	6½	0.23	2.1	1 24.8	1 53.3	− 2 36.8	+0.4715	.4830	.2539	+72	−20
45 Piscium	6	0.36	5.0	7 1.1	20 25.0	− 8 34.7	−1.0454	.4867	.2499	−13	−83
51 Pisc., *mult.*	6½	+0.40	+ 5.0	+ 6 17.1	**10** 0 10.8	− 4 54.9	+0.7007	.4879	+.2485	+90	− 7
75 Piscium	6½	0.56	8.0	12 18.3	18 57.6	−10 39.2	−1.3351	.4962	.2383	−40	−78
η Piscium	3½	0.70	9.3	14 43.1	**11** 8 11.7	+ 2 12.3	−0.8798	.5043	.2278	− 3	−76
101 Piscium	6	0.74	9.2	14 2.4	10 26.5	+ 4 23.1	+0.3693	.5058	.2257	+65	−20
104 Piscium	6½	0.76	9.2	13 41.2	12 14.8	+ 6 8.3	+1.1773	.5071	.2239	+90	+28
105 Piscium	6	+0.76	+ 9.9	+15 47.4	12 26.5	+ 6 19.7	−1.0844	.5071	+.2237	−17	−75
4 Arietis	6½	0.81	10.1	16 21.1	16 48.3	+10 33.7	−0.7283	.5104	.2191	+ 5	−74
ι Arietis	6	0.86	10.6	17 13.4	21 26.6	− 8 56.3	−0.6665	.5173	.2093	+ 8	−72
B. A. C. 632	6	0.90	10.9	17 40.3	**12** 0 37.7	− 5 50.9	−0.4738	.5166	.2102	+19	−62
15 Arietis	6	0.90	11.5	18 55.7	4 1.7	− 2 33.3	−1.1231	.5201	.2051	−22	−71
θ Arietis	5½	+0.99	+11.7	+19 20.4	6 42.3	+ 0 0.2	−0.8170	.5217	+.2026	− 1	−71
26 Arietis	6½	1.07	11.7	19 19.0	13 43.9	+ 6 50.6	+0.3951	.5280	.1925	+68	−14
ν Arietis	5½	1.12	12.4	21 26.2	17 34.9	+10 34.1	−1.1492	.5315	.1865	−25	−69
μ Arietis	5½	1.14	11.7	19 29.6	19 16.5	−11 47.6	+1.2451	.5331	.1838	+90	+43
ε Arietis, *mult.*	4½	1.26	12.0	20 51.3	**13** 3 2.4	− 4 17.3	+1.1620	.5405	.1703	+90	+36
64 Arietis	6	+1.43	+13.0	+24 17.6	14 11.4	+ 6 28.8	−0.7122	.5515	+.1486	+ 4	−66
7 Tauri, *mult.*	6	1.50	12.8	24 3.4	18 36.4	+10 44.4	+0.1745	.5557	.1393	+54	−18
11 Tauri	6	1.54	12.9	24 56.2	21 18.3	−10 39.5	−0.3787	.5583	.1333	+23	−48
g Pleiadum	5½	1.56	12.5	23 54.5	23 2.8	− 8 58.8	+0.9262	.5601	.1291	+90	+23
b Pleiadum	4	1.56	12.5	23 43.9	23 4.8	− 8 56.9	+1.1153	.5601	.1291	+90	+37
m Pleiadum	7	1.56	12.7	24 27.5	23 11.2	− 8 50.7	+0.3654	.5602	.1289	+67	− 8
e Pleiadum	5	+1.56	+12.6	+24 5.2	23 12.8	− 8 49.2	+0.7593	.5602	+.1289	+90	+13
c Pleiadum	5	1.56	12.6	23 59.3	23 28.6	− 8 33.9	+0.8964	.5603	.1282	+90	+22
η Tauri	3	1.58	12.5	23 43.8	**14** 0 11.2	− 7 52.9	+1.2578	.5611	.1266	+90	+53
B. A. C. 1192	6	1.60	12.8	25 12.7	1 21.3	− 6 45.3	−0.1550	.5623	.1237	+35	−35
p Tauri	6	1.75	12.7	26 9.9	9 52.8	+ 1 27.2	−0.1866	.5702	.1027	+33	−34
φ Tauri, *mult.*	5	+1.81	+12.6	+27 3.7	13 44.8	+ 5 10.3	−0.7435	.5736	+.0925	+ 1	−63

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	°	d h m	h m				°	°
χ¹ Tauri	5½	+1.81	+12.1	+25 20.6	**14** 14 41.1	+ 6 4.5	+1.1334	.5744	+.0901	+90	+43
χ² Tauri	8½	1.81	12.1	25 20.8	14 41.3	+ 6 4.7	+1.1288	.5744	.0901	+90	+42
B. A. C. 1648	6½	2.17	10.2	27 50.0	**15** 13 36.9	+ 4 5.8	−0.1345	.5909	.0231	+36	−23
β Tauri	2	2.20	10.1	28 30.3	15 37.9	+ 6 1.9	−0.7818	.5921	.0167	− 2	−62
B. A. C. 1746	6½	2.23	9.4	27 35.0	19 19.9	+ 9 34.9	+0.2031	.5937	+.0052	+56	− 4
136 Tauri	5	+2.30	+ 8.5	+27 35.0	**16** 1 55.7	− 8 5.7	+0.1689	.5962	−.0158	+54	− 7
B. A. C. 1882	6½	2.55	8.7	28 55.4	3 7.1	− 6 57.2	−1.2162	.5965	.0196	−41	−61
B. A. C. 2097	6½	2.45	6.4	28 17.5	15 50.7	+ 5 14.6	−1.0792	.5987	.0608	−24	−62
49 Aurigæ	5½	2.47	6.0	28 7.0	17 39.8	+ 6 59.1	−1.0179	.5987	.0666	−19	−62
37 Geminorum	6	2.47	4.5	25 31.6	**17** 1 16.8	− 9 43.0	+0.9892	.5981	.0908	+90	+32
39 Geminorum	6½	+2.51	+ 4.3	+26 14.5	2 34.9	− 8 28.0	+0.1512	.5980	−.0950	+53	−15
40 Geminorum	6½	2.50	4.3	26 4.7	2 49.8	− 8 13.8	+0.2901	.5979	.0959	+62	− 8
47 Geminorum	6	2.55	3.4	27 3.4	7 18.5	− 3 56.2	−1.1500	.5970	.1097	−30	−63
52 Geminorum	6	2.52	3.1	25 5.7	8 36.0	− 2 42.0	+0.6719	.5967	.1136	+90	+11
A Geminorum	5½	2.54	2.5	25 17.0	11 55.9	+ 0 29.7	+0.0858	.5956	.1239	+49	−21
B. A. C. 2514	6½	+2.54	+ 1.4	+24 29.8	17 56.4	+ 6 15.4	+0.0751	.5934	−.1415	+48	−23
κ Gemi., *mult.*	3½	2.55	1.0	24 45.2	19 57.2	+ 8 11.3	−0.4075	.5925	.1472	+21	−49
84 Geminorum	6½	2.51	+ 0.3	22 39.0	23 17.7	+11 23.6	+1.1169	.5909	.1564	+90	+35
7 Cancri	6½	2.50	− 0.4	22 24.8	**18** 3 29.8	− 8 34.5	+0.6690	.5889	.1678	+90	+ 5
μ¹ Cancri	6	2.52	0.6	22 58.9	4 26.6	− 7 39.9	−0.0574	.5882	.1704	+41	−32
μ² Cancri	5	+2.50	− 0.6	+21 56.2	5 1.8	− 7 6.1	+0.8812	.5878	−.1719	+90	+17
B. A. C. 2788	6½	2.48	1.4	21 8.0	9 59.0	− 2 20.8	+0.7949	.5850	.1844	+90	+11
η Cancri	6	2.47	2.3	21 51.2	14 53.4	+ 2 22.0	+0.1360	.5820	.1964	+52	−25
35 Cancri	6½	2.44	2.6	20 0.3	15 56.8	+ 3 22.9	+0.7674	.5813	.1988	+90	+ 7
39 Cancri	6	2.45	3.0	20 26.2	17 51.2	+ 5 12.9	−0.0426	.5800	.2032	+42	−35
40 Cancri	6	+2.45	− 3.0	+20 24.0	17 53.3	+ 5 14.9	−0.0140	.5800	−.2032	+43	−34
ε Cancri	6½	2.44	2.9	19 58.4	17 59.9	+ 5 21.2	+0.3867	.5800	.2032	+67	−13
42 Cancri	6½	2.44	2.9	20 8.9	18 6.4	+ 5 27.4	+0.1912	.5799	.2036	+55	−23
B. A. C. 2925	6½	2.44	2.9	20 0.5	18 11.7	+ 5 32.5	+0.3108	.5799	.2038	+62	−17
80 Cancri	6½	2.37	4.9	18 32.5	**19** 6 50.7	− 6 17.4	−0.9874	.5712	.2298	−11	−72
83 Cancri	6	+2.37	− 5.4	+18 13.2	9 46.4	− 3 28.4	−1.3499	.5690	−.2350	−48	−72
7 Leonis	6½	2.27	6.1	14 55.2	16 54.5	+ 3 23.8	+0.1900	.5644	.2466	+55	−28
ψ Leonis	6	2.25	6.5	14 34.6	20 14.7	+ 6 36.7	−0.3035	.5622	.2516	+28	−55
ν Leonis	5	2.19	7.2	13 1.1	**20** 2 29.3	−11 22.2	−0.3617	.5582	.2598	+25	−60
A Leonis	5	2.13	7.4	10 35.6	6 43.3	− 7 17.4	+0.9228	.5549	.2657	+90	+ 8
α Leonis	1½	+2.14	− 7.7	+12 33.6	6 55.0	− 7 6.0	−1.0725	.5554	−.2649	−16	−78
B. A. C. 3538	6½	2.06	7.9	9 34.5	13 1.2	− 1 12.7	+0.2420	.5518	.2709	+57	−29
44 Leonis	6	2.05	8.0	9 24.1	14 21.3	+ 0 4.5	+0.0508	.5510	.2720	+47	−39
B. A. C. 3562	6½	2.05	8.0	9 23.4	14 30.6	+ 0 13.5	+0.0203	.5510	.2721	+45	−41
45 Leonis	6	2.06	8.3	10 22.9	15 24.6	+ 1 5.7	−1.2059	.5505	.2728	−25	−80
ρ Leonis	4	+2.04	− 8.6	+ 9 55.9	17 42.7	+ 3 19.0	−1.3916	.5492	−.2746	−48	−80
48 Leonis	6	1.99	8.2	9 34.7	18 37.4	+ 4 11.7	+0.6839	.5487	.2754	−90	− 7
49 Leonis	6	2.01	8.5	9 16.6	18 42.8	+ 4 16.9	−1.0209	.5487	.2754	−11	−81
37 Sextantis	6	1.96	8.7	7 0.8	23 41.2	+ 9 5.1	−0.1578	.5463	.2786	+36	−51
d Leonis	5	1.88	8.7	4 16.2	**21** 6 15.0	− 8 34.5	+0.7213	.5433	.2816	+90	− 6
B. A. C. 3836	6	+1.82	− 8.9	+ 2 54.9	12 20.7	− 2 41.2	+0.3439	.5411	−.2832	+63	−27
75 Leonis	6	1.81	9.0	2 40.7	13 54.0	− 1 11.0	+0.1385	.5406	.2835	+52	−37
76 Leonis	6	1.79	9.0	2 19.0	14 39.3	− 0 27.2	+0.2837	.5403	.2836	+60	−29
79 Leonis	6	1.77	9.1	+ 2 4.5	17 0.6	+ 1 49.3	−0.1433	.5395	.2839	+36	−52
υ Leonis	4½	1.69	9.1	− 0 9.2	22 58.5	+ 7 35.3	+0.3790	.5379	.2837	+65	−24
χ Virginis	5	1.36	8.9	7 19.6	**23** 3 58.0	+11 37.2	−0.5176	.5356	.2703	+16	−75
B. A. C. 4259	6	+1.36	− 8.9	− 7 21.8	4 1.7	+11 40.8	−0.4969	.5356	−.2704	+17	−74
28 Virginis	6	1.35	9.2	6 49.9	5 13.3	−11 9.9	−1.3564	.5358	.2692	−43	−90
B. A. C. 4312	6½	1.31	8.5	9 40.6	9 35.2	− 6 56.8	+0.3495	.5361	.2653	+61	−26
ψ Virginis	5	1.29	8.8	8 52.4	10 58.3	− 5 36.3	−0.8302	.5363	.2639	− 2	−90
g Virginis	6	1.23	8.7	10 5.4	17 13.7	+ 0 26.7	−1.2328	.5374	.2573	−31	−90
75 Virginis	6	+1.09	− 7.6	−14 44.3	**24** 4 39.8	+11 29.7	+0.6312	.5401	−.2429	+74	−11

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JANUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
83 Virginis	6	+1.02	- 7.6	-15 34.1	24 9 56.8	- 7 23.9	+0.2162	.5417	-.2351	+49	-32
85 Virginis	6	1.02	7.8	15 9.5	10 26.8	- 6 54.9	-0.3205	.5418	.2344	+22	-62
B. A. C. 4722	6	0.87	7.4	17 37.9	23 49.8	+ 6 0.5	-0.7803	.5464	.2124	- 5	-90
B. A. C. 4739	6	0.85	7.3	18 9.1	25 1 15.4	+ 7 23.1	-0.5475	.5469	.2100	+ 7	-79
B. A. C. 4923	6	0.67	6.8	20 51.9	18 12.6	- 0 15.3	-1.0271	.5537	.1763	-25	-90
B. A. C. 4984	6	+0.62	- 6.1	-23 31.1	23 35.8	+ 4 56.4	+0.8185	.5558	-.1644	+67	+ 2
B A. C. 5023	6	0.59	6.7	21 57.0	26 2 25.7	+ 7 40.2	-1.2753	.5569	.1579	-51	-90
42 Libræ	5½	0.48	6.3	23 25.3	12 35.8	- 6 31.8	-1.2260	.5605	.1338	-48	-90
B. A. C. 5197	6	0.46	6.1	24 19.9	14 56.1	- 4 16.6	-0.5778	.5613	.1280	- 3	-84
b Scorpii	5	0.44	5.8	25 22.8	17 5.0	- 2 12.5	+0.2546	.5620	.1227	+39	-30
A^2 Scorp., *mult.*	5	+0.42	- 6.0	-24 57.8	18 12.2	- 1 7.7	-0.3205	.5623	-.1200	+ 9	-64
B. A. C. 5253	6	0.42	6.4	24 10.2	18 20.3	- 0 59.8	-1.1708	.5624	.1195	-43	-90
B. A. C. 5255	6	0.43	6.0	25 2.9	18 27.1	- 0 56.3	-0.2606	.5624	.1192	+12	-60
3 Scorpii	6	0.42	6.1	24 53.0	18 38.7	- 0 42.1	-0.4561	.5624	.1187	+ 2	-74
4 Scorpii	6	0.42	5.8	25 54.5	18 58.9	- 0 22.7	+0.5812	.5625	.1180	+58	-12
B. A. C. 5286	6½	+0.40	- 6.2	-24 29.3	20 18.3	+ 0 53.7	-1.0668	.5629	-.1147	-35	-90
π Scorpii	3	0.40	5.9	25 45.8	20 23.5	+ 0 58.7	+0.2652	.5629	.1144	+39	-29
B. A. C. 5314	6	0.38	6.0	25 31.6	22 17.3	+ 2 48.4	-0.1961	.5634	.1095	+14	-56
B. A. C. 5347	5	0.36	5.8	26 0.0	27 0 16.5	+ 4 43.2	+0.0911	.5639	.1043	+28	-39
σ Scorpii	6½	0.32	6.1	25 18.0	5 45.8	+10 0.3	-1.1830	.5653	.0899	-47	-90
α Scorpii	5½	+0.28	- 6.0	-26 9.7	9 10.5	-10 42.5	-0.5639	.5660	-.0808	- 7	-84
τ Scorpii	3½	0.26	5.5	27 57.7	11 49.8	- 8 9.2	+1.1397	.5664	.0735	+62	+30
B. A. C. 5603	6½	0.22	5.6	28 16.9	15 37.2	- 4 30.3	+1.2212	.5669	.0632	+62	+41
B. A. C. 5800	6½	0.13	6.1	26 50.3	28 3 48.6	+ 7 14.0	-0.8823	.5673	.0299	-30	-90
43 Ophiuchi	6	0.10	5.9	28 1.4	7 34.9	+10 51.8	+0.2898	.5669	-.0194	+32	-27
3 Sagittarii	5	+0.04	- 6.2	-27 47.0	17 42.0	- 3 23.6	-0.0197	.5655	+.0085	+14	-45
B. A. C. 6024	6½	0.03	6.4	27 1.3	18 53.7	- 2 14.6	-0.8258	.5652	.0118	-28	-90
B. A. C. 6063	6½	+0.01	6.2	28 2.8	21 32.5	+ 0 18.3	+0.3162	.5646	.0192	+33	-26
B. A. C. 6072	6½	0.00	6.0	28 44.5	22 20.3	+ 1 4.4	+1.0787	.5644	.0214	+62	+25
B. A. C. 6120	6½	-0.02	6.1	28 22.3	29 1 47.0	+ 4 23.4	+0.7718	.5634	.0305	+62	+ 1
B. A. C. 6127	5	-0.02	- 6.2	-28 28.2	2 19.7	+ 4 54.9	+0.8952	.5632	+.0322	+62	+10
B. A. C. 6191	6½	0.02	6.2	28 19.6	6 17.0	+ 8 43.6	+0.8878	.5619	.0425	+62	+ 9
B. A. C. 6194	5½	0.03	6.5	27 5.2	6 36.1	+ 9 2.0	-0.4332	.5618	.0433	- 4	-72
B. A. C. 6220	6½	0.05	6.1	28 29.3	8 14.8	+10 37.1	+1.1521	.5612	.0478	+63	+32
φ Sagittarii	3½	0.10	6.5	27 7.0	18 27.7	- 3 32.0	+0.2959	.5569	.0741	+37	-27
σ Sagittarii	2½	-0.11	- 6.6	-26 26.9	22 40.3	+ 0 31.5	-0.0937	.5547	+.0846	+17	-49
B. A. C. 6562	6½	0.14	6.8	26 6.8	30 6 36.4	+ 8 10.9	+0.2894	.5505	.1034	+39	-27
ψ Sagittarii	5	0.13	6.8	25 28.0	7 39.1	+ 9 11.4	-0.3045	.5498	.1062	+ 9	-63
χ^1 Sagittarii	6	0.15	6.8	24 44.7	12 1.9	-10 34.8	-0.6032	.5473	.1160	- 6	-87
χ^2 Sagittarii	6½	0.15	6.8	24 39.2	12 4.9	-10 32.0	-0.6979	.5473	.1160	-11	-90
χ^3 Sagittarii	6	-0.15	- 6.9	-24 12.0	12 9.0	-10 28.0	-1.1830	.5472	+.1162	-44	-90
B. A. C. 6699	6½	0.16	7.1	23 34.5	16 45.7	- 6 0.7	-1.3062	.5443	.1264	-62	-90
h^1 Sagittarii	6	0.16	6.8	24 59.2	16 54.2	- 5 52.5	+0.2502	.5443	.1267	+39	-30
h^2 Sagittarii	5½	0.15	6.8	25 9.2	17 12.3	- 5 35.0	+0.4699	.5441	.1273	+44	-18
B. A. C. 6727	6½	-0.16	- 6.9	-23 42.4	18 48.2	- 4 2.4	-0.9018	.5431	+.1307	-21	-90

FEBRUARY.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
67 Aquarii	6	-0.10	- 3.4	- 7 36.0	3 16 59.0	- 8 40.2	+0.4433	.4891	+.2483	+69	-21
B. A. C. 7966	6	0.09	2.7	5 38.3	23 46.0	- 2 4.0	-0.0420	.4871	.2512	+41	-46
B. A. C. 8094	6	0.04	1.9	4 9.5	4 11 24.7	+ 9 16.2	+1.2601	.4847	.2542	+86	+29
11 Piscium	6½	-0.01	- 1.7	- 2 27.7	19 23.0	- 6 58.1	+1.4054	.4839	+.2551	+88	+48
15 Piscium	6½	0.02	- 0.2	+ 0 38.3	22 51.5	- 3 35.0	-1.1527	.4837	.2552	-20	-90
λ Piscium	5	-0.01	+ 0.1	1 6.5	5 2 38.3	+ 0 5.8	-0.7104	.4836	.2551	+ 7	-88
B. A. C. 8276	6½	+0.02	0.4	1 32.3	6 30.9	+ 3 52.2	-0.1993	.4836	.2549	+34	-55
21 Piscium	6	0.03	0.2	0 23.9	7 4.2	+ 4 25.0	+1.2081	.4836	.2549	+90	+25
22 Piscium	6	+0.02	+ 0.7	+ 2 15.2	8 19.3	+ 5 37.8	-0.5322	.4837	+.2548	+17	-76

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	"	° '	d h m	h m				°	°
25 Piscium	6½	+0.03	+ 0.5	+ 1 24.8	5 8 57.5	+ 6 15.0	+0.5630	.4837	+.2547	+78	-15
45 Piscium	6	0.12	3.1	7 1.0	6 3 33.0	+ 0 20.9	-0.9559	.4864	.2500	- 7	-83
51 Pisc., *mult.*	6½	0.15	3.1	6 17.0	7 20.1	+ 4 2.0	+0.7993	.4873	.2484	+90	- 1
75 Piscium	6½	0.25	6.1	12 18.3	7 2 16.3	- 1 32.7	-1.2482	.4941	.2374	-30	-78
η Piscium	3½	0.38	7.4	14 43.1	15 40.2	+11 28.5	-0.7921	.5011	.2263	+ 2	-67
101 Piscium	6	+0.41	+ 7.4	+14 2.4	17 56.9	-10 18.7	+0.4667	.5025	+.2241	+72	-15
104 Piscium	6½	0.43	7.3	13 40.2	19 46.8	- 8 31.9	+1.2820	.5035	.2223	+90	+39
105 Piscium	6	0.41	7.9	15 47.3	19 58.8	- 8 20.3	-0.9998	.5037	.2221	-11	-74
3 Arietis	6½	0.45	8.6	16 48.2	23 34.1	- 4 50.8	-1.3189	.5060	.2184	-41	-73
4 Arietis	6½	0.46	8.4	16 21.1	8 0 24.7	- 4 2.2	-0.6413	.5065	.2175	+10	-72
ι Arietis	6	+0.52	+ 8.9	+17 13.4	5 7.8	+ 0 32.6	-0.5814	.5096	+.2123	+13	-69
B. A. C. 632	6	0.55	9.1	17 40.2	8 22.4	+ 3 41.4	-0.3872	.5118	.2083	+23	-57
15 Arietis	6	0.59	9.7	18 55.5	11 50.4	+ 7 3.1	-1.0442	.5144	.2038	-16	-71
θ Arietis	5½	0.60	10.0	19 20.3	15 35.4	+10 41.2	-0.7364	.5171	.1989	+ 4	-70
26 Arietis	6½	0.71	10.3	19 19.0	21 44.8	- 7 20.7	+0.4863	.5220	.1901	+75	- 9
ν Arietis	5½	+0.74	+11.0	+21 26.1	9 1 41.0	- 3 32.0	-1.0762	.5252	+.1840	-19	-69
μ Arietis	5½	0.78	10.4	19 29.6	3 25.1	- 1 51.2	+1.3443	.5266	.1812	+90	+61
ε Arietis, *mult.*	4½	0.90	11.0	20 51.3	11 22.3	+ 5 50.5	+1.2578	.5333	.1678	+90	+46
64 Arietis	6	1.08	12.3	24 17.6	22 48.9	- 7 5.9	-0.6443	.5433	.1460	+ 8	-64
7 Tauri, *mult.*	6	1.15	12.2	24 3.4	10 3 21.1	- 2 43.0	+0.2512	.5473	.1365	+59	-15
11 Tauri	6	+1.18	+12.4	+24 56.2	6 7.7	- 0 2.2	-0.3172	.5502	+.1295	+26	-44
g Pleiadum	5½	1.20	12.1	23 54.5	7 55.1	+ 1 41.3	+1.0104	.5514	.1267	+90	+29
b Pleiadum	4	1.21	12.0	23 43.9	7 57.2	+ 1 43.4	+1.2106	.5514	.1267	+90	+46
m Pleiadum	7	1.21	12.3	24 27.9	8 3.8	+ 1 49.8	+0.4455	.5514	.1265	+73	- 4
e Pleiadum	5	1.21	12.2	24 5.2	8 5.5	+ 1 51.4	+0.8472	.5514	.1265	+90	+19
c Pleiadum	5	+1.21	+12.2	+23 59.3	8 21.8	+ 2 7.1	+0.9872	.5517	+.1258	+90	+28
B. A. C. 1192	6½	1.26	12.6	25 12.7	10 17.6	+ 3 58.8	-0.0858	.5534	.1215	+39	-30
p Tauri	6	1.41	12.5	26 9.9	19 4.1	-11 33.6	-0.1223	.5609	.1006	+37	-30
φ Tauri, *mult.*	5	1.49	12.6	27 3.7	23 2.9	- 7 43.6	-0.6882	.5642	.0905	+ 5	-62
χ^1 Tauri	5½	1.48	12.0	25 20.6	11 0 0.9	- 6 47.8	+1.2131	.5650	.0880	+90	+50
χ^2 Tauri	8½	+1.48	+12.0	+25 20.8	0 1.2	- 6 47.5	+1.2084	.5650	+.0880	+90	+50
B. A. C. 1648	6½	1.92	11.1	27 50.1	23 37.0	- 8 6.0	-0.0843	.5815	.0223	+39	-21
β Tauri	2	1.97	11.0	28 30.3	12 1 41.3	- 6 6.6	-0.7401	.5824	.0163	+ 1	-62
B. A. C. 1746	6½	2.02	10.3	27 35.1	5 29.4	- 2 27.5	+0.2540	.5844	+.0049	+60	- 2
136 Tauri	5	2.13	9.4	27 35.0	12 15.8	+ 4 2.5	+0.2156	.5872	-.0160	+57	- 5
B. A. C. 1882	6½	+2.17	+ 9.6	+28 55.4	13 29.1	+ 5 13.0	-1:1847	.5876	-.0198	-37	-61
B. A. C. 2097	6½	2.36	7.7	28 17.5	13 2 31.1	- 6 16.8	-1.0520	.5909	.0606	-22	-62
49 Aurigæ	5½	2.38	7.4	28 7.0	4 22.6	- 4 29.9	-0.9908	.5911	.0664	-16	-62
37 Geminorum	6	2.44	5.3	25 31.7	12 8.8	+ 2 57.3	+1.0285	5914	.0905	+90	+35
39 Geminorum	6½	2.46	5.2	26 14.5	13 28.4	+ 4 13.7	+0.1835	.5914	.0944	+55	-13
40 Geminorum	6½	+2.46	+ 5.1	+26 4.8	13 43.5	+ 4 28.1	+0.3231	.5914	-.0954	+64	- 6
47 Geminorum	6	2.53	4.6	27 3.4	18 16.9	+ 8 50.3	-1.1290	.5910	.1091	-28	-63
52 Geminorum	6	2.51	3.9	25 5.7	19 35.7	+10 6.0	+0.7039	.5908	.1130	+90	+12
A Geminorum	5½	2.55	3.4	25 17.1	22 58.6	-10 39.3	+0.1120	.5903	.1231	+51	-19
B. A. C. 2514	6½	2.59	2.1	24 29.8	14 5 3.9	- 4 48.8	+0.0979	.5889	.1409	+50	-22
κ Gemi., *mult.*	3½	+2.62	+ 1.8	+24 41.4	7 6.0	- 2 51.6	-0.3875	.5883	-.1466	+23	-48
84 Geminorum	6½	2.59	+ 0.6	22 39.0	10 28.6	+ 0 22.9	+1.1397	.5872	.1560	+90	+37
7 Cancri	6½	2.63	- 0.1	22 24.8	14 42.8	+ 4 26.9	+0.6875	.5857	.1677	+90	+ 6
μ^1 Cancri	6	2.46	0.3	22 58.9	15 39.9	+ 5 21.7	-0.0407	.5854	.1701	+42	-32
μ^2 Cancri	5	2.63	0.4	21 56.2	16 15.5	+ 5 55.9	-0.8993	.5851	.1716	+90	+18
B. A. C. 2788	6½	2.64	1.5	21 8.0	21 14.3	+10 42.8	+0.8093	.5830	.1845	+90	+11
η Cancri	6	+2.66	- 2.4	+20 51.2	15 2 9.6	- 8 33.5	+0.1469	.5808	-.1965	+52	-25
35 Cancri	6½	2.64	2.7	20 0.3	3 13.2	- 7 32.4	+0.7768	.5803	.1991	+90	+ 8
39 Cancri	6	2.67	2.9	20 26.2	5 7.5	- 5 42.5	-0.0327	.5794	.2035	+42	-35
40 Cancri	6	2.67	2.9	20 24.0	5 9.6	- 5 40.5	-0.0041	.5794	.2035	+44	-33
ε Cancri	6½	2.65	3.0	19 58.4	5 16.2	- 5 34.2	+0.3959	.5794	.2038	+68	-13
42 Cancri	6½	+2.66	- 3.1	+20 8.9	5 22.7	- 5 28.0	+0.2008	.5793	-.2040	+56	-23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 2925	6½	+2.66	- 3.1	+20 0.5	**15** 5 28.0	- 5 22.8	+0.3198	.5793	-.2042	+63	-17
80 Cancri	6½	2.67	5.5	18 32.5	18 4.6	+ 6 44.7	-0.9802	.5728	.2309	-11	-72
83 Cancri	6	2.68	6.1	18 13.2	20 59.0	+ 9 32.5	-1.3415	.5713	.2363	-46	-72
7 Leonis	6½	2.61	7.5	14 55.2	**16** 4 2.8	- 7 39.6	+0.1875	.5675	.2486	+55	-29
ψ Leonis	6	2.60	8.0	14 34.6	7 20.5	- 4 29.2	-0.3042	.5658	.2537	+28	-55
ν Leonis	5	+2.59	- 8.9	+13 1.4	13 29.5	+ 1 26.3	-0.3693	.5628	-.2624	+25	-60
URANUS				13 7.8	16 46.7	+ 4 36.3	-1.3428	.5629	.2673	-41	-77
Λ Leonis	5	2.54	9.7	10 35.5	17 39.5	+ 5 26.8	+0.9074	.5609	.2676	+90	+ 7
α Leonis	1½	2.57	9.7	12 33.6	17 50.6	+ 5 37.9	-1.0700	.5608	.2678	-16	-78
B. A. C. 3538	6½	2.52	10.5	9 34.4	23 49.6	+11 23.9	+0.2298	.5580	.2743	+57	-30
44 Leonis	6	+2.51	-10.6	+ 9 24.0	**17** 1 7.9	+11 20.7	+0.0405	.5575	-.2756	+46	-40
B. A. C. 3562	6½	2.51	10.6	9 23.4	1 17.0	-11 11.8	+0.0101	.5514	.2757	+44	-41
45 Leonis	6	2.52	10.8	10 22.8	2 9.9	-10 20.8	-1.2031	.5570	.2765	-25	-80
ρ Leonis	4	2.52	11.1	9 55.8	4 24.8	- 8 10.7	-1.3874	.5560	.2785	-47	-80
48 Leonis	6	2.48	11.0	7 34.7	5 18.2	- 7 19.3	+0.6654	.5557	.2791	+88	- 8
49 Leonis	6	+2.51	-11.1	+ 9 16.6	5 23.5	- 7 14.2	-1.0209	.5557	-.2791	-11	-81
37 Sextantis	6	2.46	11.8	7 0.7	10 14.5	- 2 33.5	-0.1689	.5538	.2826	+35	-52
d Leonis	5	2.40	12.3	4 16.1	16 37.7	+ 3 36.3	+0.6974	.5517	.2861	+90	- 7
B. A. C. 3836	6	2.37	12.7	2 54.9	22 32.8	+ 9 19.0	+0.3230	.5500	.2881	+62	-28
75 Leonis	6	2.36	12.9	2 40.6	**18** 0 3.3	+10 46.3	+0.1199	.5496	.2884	+50	-37
76 Leonis	6	+2.36	-12.9	+ 2 18.9	0 47.2	+11 28.8	+0.2627	.5494	-.2886	+58	-30
79 Leonis	6	2.34	13.2	+ 2 4.4	3 3.9	-10 19.3	-0.1580	.5489	.2889	+36	-52
υ Leonis	4½	2.29	13.4	- 0 9.3	8 50.3	- 4 44.8	+0.3560	.5479	.2891	+64	-25
χ Virginis	5	2.09	14.0	7 19.6	**19** 12 47.4	- 1 45.4	-0.5304	.5466	.2758	+15	-76
B. A. C. 4259	6	2.09	14.0	7 21.9	12 51.0	- 1 41.9	-0.5099	.5466	.2757	+16	-75
28 Virginis	6	+2.09	-19.2	- 6 50.0	14 0.1	- 0 35.3	-1.3543	.5467	-.2747	-42	-90
B. A. C. 4312	6½	2.04	13.8	9 44.7	18 12.0	+ 3 27.9	+0.3213	.5472	.2707	+59	-27
ψ Virginis	5	2.03	13.9	8 52.8	19 32.0	+ 4 45.2	-0.8318	.5474	.2693	- 2	-90
g Virginis	6	1.99	13.9	10 5.5	**20** 1 33.3	+10 34.0	-1.2325	.5483	.2625	-31	-90
75 Virginis	6	1.89	12.9	14 44.4	12 34.0	- 2 48.4	+0.5994	.5506	.2476	+72	-13
83 Virginis	6	+1.86	-12.6	-15 34.2	17 39.6	+ 2 6.6	+0.1922	.5520	-.2398	+48	-34
85 Virginis	6	1.85	12.9	15 9.6	18 8.5	+ 2 34.4	-0.3352	.5521	.2389	+21	-63
B. A. C. 4722	6	1.76	12.4	17 38.0	**21** 7 4.0	- 8 57.6	-0.7867	.5560	.2160	- 6	-90
B. A. C. 4739	6	1.73	12.1	18 9.2	8 26.8	- 7 37.8	-0.5580	.5564	.2133	+ 7	-80
B. A. C. 4923	6	1.60	11.0	20 51.9	**22** 0 53.3	+ 8 12.9	-1.0209	.5614	.1786	-25	-90
B. A. C. 4984	6	+1.56	-10.1	-23 31.2	6 7.6	-10 44.3	+0.7898	.5630	-.1663	+67	- 0
B. A. C. 5023	6	1.52	10.7	21 57.0	8 53.4	- 8 4.6	-1.2738	.5638	.1598	-51	-90
42 Libræ	5½	1.44	9.9	23 25.3	18 49.4	+ 1 29.2	-1.2252	.5662	.1349	-47	-90
B. A. C. 5197	6	1.42	9.5	24 19.2	21 6.8	+ 3 41.6	-0.5844	.5667	.1292	- 4	-85
b Scorpii	5	1.39	9.1	25 22.2	23 13.0	+ 5 43.0	+0.2395	.5671	.1235	+38	-31
A^2 Scorp., *mult.*	5	+1.39	- 9.2	-24 57.8	**23** 0 18.9	+ 6 46.5	-0.3289	.5673	-.1206	+ 9	-64
B. A. C. 5253	6	1.39	9.4	24 10.2	0 26.9	+ 6 54.2	-1.1711	.5673	.1203	-43	-90
B. A. C. 5255	6	1.39	9.1	25 2.9	0 33.5	+ 7 0.5	-0.2698	.5673	.1203	+12	-60
3 Scorpii	6	1.39	9.2	24 53.1	0 44.9	+ 7 11.5	-0.4635	.5674	.1196	+ 2	-74
4 Scorpii	6	1.39	8.9	25 54.5	1 4.7	+ 7 30.5	+0.5631	.5674	.1188	+57	-12
B. A. C. 5286	6½	+1.37	- 9.2	-24 28.8	2 22.5	+ 8 45.4	-1.0772	.5676	-.1153	-35	-90
π Scorpii	3	1.37	8.9	25 45.8	2 27.7	+ 8 50.5	+0.2506	.5677	.1151	+38	-30
B. A. C. 5314	6	1.36	8.9	25 31.6	4 19.5	+10 38.1	-0.2054	.5680	.1100	+14	-56
B. A. C. 5347	5	1.34	8.7	26 0.1	6 16.6	-11 29.2	+0.0795	.5682	.1049	+28	-39
σ Scorpii	6½	1.28	8.8	25 18.0	11 40.6	- 6 17.4	-1.1825	.5687	.0902	-47	-90
α Scorpii	5½	1.25	8.2	26 9.7	15 2.4	- 3 3.3	-0.5687	.5689	.0810	- 8	-84
τ Scorpii	3½	+1.20	- 7.5	-27 57.8	17 39.7	- 0 31.8	+1.1212	.5690	-.0737	+62	+28
B. A. C. 5603	6½	1.19	7.3	28 16.9	21 24.2	+ 3 4.1	+1.2031	.5690	.0635	+62	+38
B. A. C. 5800	6½	1.07	7.3	26 50.3	**24** 9 28.8	- 9 18.6	-0.8843	.5680	.0297	-30	-90
43 Ophiuchi	6	1.03	6.8	28 1.4	13 13.6	- 5 42.2	+0.2825	.5673	-.0191	+31	-28
3 Sagittarii	5	0.94	6.4	27 47.0	23 18.2	+ 3 59.9	-0.0244	.5649	+.0086	+14	-45
B. A. C. 6024	6½	+0.92	- 6.7	-27 1.3	**25** 0 29.7	+ 5 8.8	-0.8277	.5645	+.0119	-28	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

FEBRUARY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6063	6½	+0.89	- 6.2	-28 2.8	25 3 8.1	+ 7 41.3	+0.3110	.5637	+.0193	+33	-26
B. A. C. 6072	6½	0.90	5.9	28 44.5	3 55.9	+ 8 27.4	+1.0715	.5633	.0215	+61	+24
B. A. C. 6120	6½	0.86	5.9	28 22.3	7 22.4	+11 46.3	+0.7658	.5620	.0306	+62	+ 1
B. A. C. 6127	5	0.86	5.9	28 28.2	7 55.2	-11 42.2	+0.8894	.5618	.0323	+62	+ 9
B. A. C. 6191	6½	0.83	5.8	28 19.5	11 52.6	- 7 53.4	+0.8825	.5602	.0426	+62	+ 9
B. A. C. 6194	5½	+0.81	- 6.3	-27 5.2	12 11.7	- 7 35.0	-0.4355	.5601	+.0433	- 4	-73
B. A. C. 6220	6½	0.81	5.7	28 29.3	13 50.6	- 5 59.7	+1.1468	.5594	.0478	+62	+32
φ Sagittarii	3½	0.71	5.6	27 7.0	26 0 4.9	+ 3 52.6	+0.2938	.5543	.0739	+37	-27
σ Sagittarii	2½	0.67	5.7	26 26.9	4 18.5	+ 7 57.1	-0.0954	.5521	.0842	+17	-50
B. A. C. 6562	6½	0.60	5.6	26 6.8	12 16.9	- 8 21.1	+0.2879	.5474	.1030	+39	-28
ψ Sagittarii	5	+0.59	- 5.7	-25 27.9	13 20.1	- 7 20.2	-0.3058	.5467	+.1055	+ 9	-63
χ^1 Sagittarii	6	0.56	5.6	24 44.7	17 44.5	- 3 4.8	-0.6046	.5440	.1154	- 6	-87
χ^2 Sagittarii	6½	0.56	5.7	24·39.2	17 47.5	- 3 1.9	-0.6990	.5440	.1154	-11	-90
χ^3 Sagittarii	6	0.55	5.8	24 12.0	17 51.6	- 2 57.9	-1.1841	.5439	.1156	-44	-90
h^1 Sagittarii	6	0.53	5.3	24 59.2	22 38.7	+ 1 39.4	+0.2495	.5409	.1261	+39	-30
h^2 Sagittarii	5½	+0.52	- 5.3	-25 9.1	22 56.9	+ 1 57.0	+0.4695	.5407	+.1266	+52	-18
53 Sagittarii	6	0.50	5.6	23 42.2	27 0 25.4	+ 3 22.5	-0.9247	.5398	.1297	-23	-90
B. A. C. 6727	6½	0.50	5.6	23 42.4	0 33.4	+ 3 30.2	-0.9034	.5397	.1300	-21	-90
B. A. C. 6864	6	0.43	5.2	23 4.3	10 30.7	-10 52.2	-0.2036	.5332	.1498	+19	-56
B. A. C. 6878	6½	0.42	5.2	22 56.2	11 37.4	- 9 47.6	-0.1842	.5324	.1520	+20	-55
4 Capricorni	6	+0.37	- 4.9	-22 11.2	18 28.8	- 3 9.5	+0.0775	.5278	+.1645	+35	-39
B. A. C. 7202	6	0.27	5.1	18 38.9	28 9 31.4	+11 25.0	-1.1527	.5181	.1891	-32	-90
B. A. C. 7209	6½	0.27	5.1	18 29.2	9 59.5	+11 52.3	-1.2431	.5178	.1897	-40	-90
19 Capricorni	6	0.26	5.0	18 22.1	12 45.2	- 9 27.1	-0.8272	.5161	.1938	- 9	-90
20 Capricorni	6	0.23	4.7	19 30.5	15 10.0	- 7 6.7	+0.8841	.5146	.1971	+71	+ 5
21 Capricorni	6	+0.24	- 4.9	-18 0.4	15 50.4	- 6 27.5	-0.6399	.5141	+.1981	+ 2	-88
θ Capricorni	4	+0.22	- 4.7	-17 42.0	18 26.3	- 3 56.2	-0.4399	.5126	+.2017	+13	-71
MARCH.											
31 Capricorni	6½	+0.21	- 4.3	-17 58.4	1 0 48.5	+ 2 14.7	+1.1532	.5089	+.2097	+72	+24
ι Capricorni	4½	0.20	4.4	17 21.3	2 54.1	+ 4 16.5	+0.9103	.5078	.2122	+73	+ 6
42 Capricorni	6	0.14	4.3	14 35.5	13 10.7	- 9 44.6	+0.0930	.5022	.2235	+43	-39
44 Capricorni	6	+0.15	- 4.2	-14 57.5	13 58.9	- 8 57.8	+0.6801	.5018	.2243	+75	- 8
45 Piscium	6	-0.01	+ 1.7	+ 7 1.0	5 9 43.6	+ 8 19.0	-1.0025	.4871	.2503	-10	-83
51 Pisc., *mult.*.	6½	+0.02	+ 1.9	+ 6 17.0	13 30.1	+11 59.5	+0.7540	.4864	+.2535	+90	- 4
75 Piscium	6½	0.05	4.1	12 18.3	6 8 24.9	+ 6 23.3	-1.3071	.4958	.2376	-37	-78
η Piscium	3½	0.12	5.5	14 43.1	21 49.6	- 4 34.6	-0.8570	.5020	.2262	- 2	-76
101 Piscium	6	0.14	5.4	14 2.4	7 0 6.7	- 2 21.4	+0.4061	.5032	.2241	+68	-18
104 Piscium	6½	0.16	5.5	13 40.1	1 56.9	- 0 34.3	+1.2338	.5042	.2222	+90	+33
105 Piscium	6	+0.14	+ 6.0	+15 47.3	2 8.8	- 0 22.8	-1.0676	.5043	+.2220	-16	-74
4 Arietis	6½	0.17	6.3	16 21.1	6 35.7	+ 3 56.3	-0.7096	.5068	.2172	+ 6	-74
ι Arietis	6	0.21	7.0	17 13.4	11 20.2	+ 8 32.5	-0.6513	.5097	.2117	+ 9	-72
B. A. C. 632	6	0.23	7.3	17 40.2	14 35.8	+11 42.3	-0.4579	.5117	.2078	+19	-61
15 Arietis	7	0.25	7.8	18 55.6	18 5.1	- 8 54.9	-1.1202	.5139	.2033	-22	-71
θ Arietis	5½	+0.27	+ 7.9	+19 20.3	21 51.9	- 5 14.7	-0.8111	.5164	+.1981	0	-71
26 Arietis	6½	0.34	8.2	19 18.9	8 4 4.5	+ 0 46.4	+0.4173	.5207	.1892	+69	-13
ν Arietis	5½	0.38	9.2	21 26.1	8 3.2	+ 4 37.7	-1.1582	.5236	.1830	-26	-69
μ Arietis	5½	0.41	8.6	19 29.6	9 48.5	+ 6 19.7	+1.2806	.5248	.1803	+90	+47
ε Arietis, *mult.*	4½	0.50	9.2	20 51.2	17 51.8	- 9 52.4	+1.1918	.5307	.1666	+90	+39
64 Arietis	6	0.63	10.5	24 17.6	9 5 29.3	+ 1 22.1	-0.7300	.5394	.1448	+ 3	-66
7 Tauri, *mult.*	6	+0.70	+10.7	+24 3.4	10 6.6	+ 5 50.1	+0.1744	.5428	+.1354	+54	-18
11 Tauri	6	0.74	11.1	24 56.2	12 56.5	+ 8 34.2	-0.4010	.5450	.1293	+22	-48
g Pleiadum	5½	0.77	10.6	23 54.4	14 46.2	+10 20.1	+0.9412	.5463	.1254	+90	+24
b Pleiadum	4	0.77	10.6	23 43.9	14 48.3	+10 22.2	+1.1347	.5463	.1254	+90	+39
m Pleiadum	7	0.78	10.8	24 27.4	14 55.0	+10 28.6	+0.3665	.5465	.1249	+67	- 8
e Pleiadum	5	+ 0.77	+10.7	+24 5.2	14 56.7	+10 30.2	+0.7698	.5465	+.1248	+90	+14

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
c Pleiadum	5	+0.77	+10.7	+23 59.3	**9** 15 13.3	+10 46.2	+0.9105	.5467	+.1243	+90	+22
η Tauri	3	0.79	10.6	23 43.8	15 58.0	+11 29.5	+1.2809	.5472	.1227	+90	+56
B. A. C. 1192	6½	0.80	11.2	25 12.7	17 11.7	−11 19.4	−0.1669	.5481	.1200	+35	−35
p Tauri	6	0.94	11.3	26 9.9	**10** 2 10.3	− 2 39.8	−0.2054	.5545	.0992	+32	−35
φ Tauri, *mult.*	5	1.02	11.6	27 3.7	6 15.2	+ 1 16.3	−0.7793	.5574	.0893	− 1	−63
χ^1 Tauri	5½	+1.03	+10.9	+25 20.5	7 14.7	+ 2 13.6	+1.1466	.5581	+.0869	+90	+44
χ^2 Tauri	8½	1.03	10.9	25 20.8	7 14.8	+ 2 13.7	+1.1418	.5581	.0868	+90	+44
B. A. C. 1648	6½	1.46	10.8	27 50.1	**11** 7 32.4	+ 1 37.2	−0.1681	.5720	.0220	+34	−25
β Tauri	2	1.50	10.9	28 30.3	9 40.8	+ 3 40.7	−0.8335	.5730	.0160	− 5	−62
B. A. C. 1746	6½	1.56	10.2	27 35.0	13 36.6	+ 7 27.5	+0.1762	.5746	+.0047	+55	− 6
136 Tauri	5	+1.68	+ 9.7	+27 35.0	20 36.8	− 9 48.6	+0.1380	.5770	−.0158	+52	− 8
B. A. C. 2097	6½	1.95	8.2	28 17.5	**12** 11 22.5	+ 4 22.5	−1.1479	.5799	.0592	−31	−62
49 Aurigæ	5½	1.98	7.9	28 7.1	13 18.1	+ 6 13.5	−1.0857	.5800	.0649	−25	−62
37 Geminorum	6	2.06	6.0	25 31.7	21 21.1	−10 2.4	+0.9696	.5803	.0885	+90	+31
39 Geminorum	6½	2.11	6.1	26 14.5	22 43.5	− 8 43.3	+0.1108	.5803	.0926	+50	−17
40 Geminorum	6½	+2.10	+ 6.0	+26 4.8	22 59.2	− 8 28.2	+0.2532	.5803	−.0931	+59	−10
47 Geminorum	6	2.19	5.7	27 3.4	**13** 3 42.4	− 3 56.1	−1.2215	.5801	.1067	−39	−63
52 Geminorum	6	2.17	4.9	25 5.7	5 4.0	− 2 37.7	+0.6414	.5798	.1106	+90	+ 9
A Geminorum	5½	2.23	4.4	25 17.1	8 34.2	+ 0 44.3	+0.0414	.5794	.1205	+46	−23
B. A. C. 2514	6½	2.31	3.1	24 29.8	14 52.2	+ 6 47.5	+0.0297	.5782	.1379	+46	−25
κ Gem., *mult.*	3½	+2.34	+ 2.9	+24 41.4	16 58.5	+ 8 48.9	−0.4624	.5777	−.1435	+18	−52
84 Geminorum	6½	2.34	1.6	22 39.0	20 27.9	−11 49.7	+1.0892	.5769	.1529	+90	+33
7 Cancri	6½	2.38	0.9	22 24.8	**14** 0 50.4	− 7 37.4	+0.6321	.5757	.1641	+89	+ 3
μ^1 Cancri	6	2.41	0.9	22 59.0	1 49.5	− 6 40.6	−0.1057	.5754	.1666	+38	−35
μ^2 Cancri	5	2.40	+ 0.5	21 56.2	2 26.2	− 6 5.3	+0.8474	.5752	.1682	+90	+15
B. A. C. 2788	6½	+2.44	− 0.6	+21 8.0	7 34.2	− 1 9.1	+0.7589	.5736	−.1808	+90	+ 9
η Cancri	6	2.49	1.6	20 51.2	12 38.3	+ 3 43.4	+0.0903	.5719	.1928	+49	−27
35 Cancri	6½	2.48	1.9	20 0.3	13 43.6	+ 4 46.2	+0.7296	.5715	.1954	+90	+ 5
39 Cancri	6	2.52	2.0	20 26.2	15 41.3	+ 6 39.5	−0.0898	.5708	.1997	+39	−38
40 Cancri	6	2.52	2.0	20 24.0	15 43.5	+ 6 41.6	−0.0612	.5708	.2000	+41	−36
ε Cancri	6½	+2.50	− 2.2	+19 58.4	15 50.3	+ 6 48.1	+0.3440	.5707	−.2002	+65	−16
42 Cancri	6½	2.50	2.3	20 8.9	15 56.9	+ 6 54.5	+0.1468	.5707	.2003	+52	−26
B. A. C. 2925	6½	2.50	2.3	20 0.6	16 2.4	+ 6 59.8	+0.2672	.5706	.2006	+59	−19
80 Cancri	6½	2.59	4.8	18 32.5	**15** 4 58.1	− 4 33.5	−1.0371	.5658	.2272	−17	−72
7 Leonis	6½	2.59	7.3	14 55.2	15 8.8	+ 5 14.6	+0.1506	.5620	.2452	+52	−30
ψ Leonis	6	+2.61	− 7.9	+14 34.6	18 30.0	+ 8 28.6	−0.3416	.5608	−.2505	+26	−57
ν Leonis	5	2.61	9.1	13 1.4	**16** 0 44.6	− 9 30.3	−0.4014	.5587	.2596	+23	−62
Uranus				13 30.7	2 11.3	− 8 6.8	−1.2604	.5736	.2620	−32	−77
A Leonis	5	2.59	10.2	10 35.5	4 57.4	− 5 26.6	+0.8872	.5574	.2649	+90	+ 6
α Leonis	1½	2.62	9.8	12 33.6	5 8.9	− 5 15.5	−1.1000	.5573	.2652	−18	−78
B. A. C. 3538	6½	+2.61	−11.1	+ 9 34.4	11 11.4	+ 0 34.1	+0.2124	.5556	−.2720	+56	−31
44 Leonis	6	2.61	11.3	9 24.0	12 30.4	+ 1 50.1	+0.0237	.5553	.2733	+45	−40
B. A. C. 3562	6½	2.61	11.4	9 23.3	12 39.5	+ 1 59.0	−0.0074	.5553	.2735	+43	−42
45 Leonis	6	2.63	11.4	10 22.8	13 32.8	+ 2 50.5	−1.2224	.5550	.2744	−27	−80
ρ Leonis	4	2.63	11.7	9 55.8	15 48.6	+ 5 1.4	−1.4038	.5545	.2765	−51	−80
48 Leonis	6	+2.60	−12.1	+ 7 34.7	16 42.3	+ 5 53.2	+0.6546	.5543	−.2773	+87	− 9
49 Leonis	6	2.62	11.9	9 16.6	16 47.6	+ 5 58.3	−1.0349	.5543	.2773	−12	−81
37 Sextantis	6	2.60	12.7	7 0.7	21 39.7	+10 40.1	−0.1762	.5532	.2813	+35	−52
d Leonis	5	2.58	13.8	4 16.1	**17** 4 3.2	− 7 9.9	+0.6979	.5522	.2852	+90	− 7
B. A. C. 3836	6	2.60	14.5	2 54.8	9 57.4	− 1 28.1	+0.3301	.5514	.2878	+62	−27
75 Leonis	6	2.60	14.7	2 40.6	11 27.4	− 0 1.3	+0.1292	.5513	.2882	+51	−37
76 Leonis	6	+2.60	−14.8	+ 2 18.9	12 11.1	+ 0 40.9	+0.2730	.5512	−.2884	+59	−30
79 Leonis	6	2.59	15.0	+ 2 4.4	14 27.1	+ 2 52.2	−0.1446	.5511	.2890	+36	−51
v Leonis	4½	2.57	15.7	− 0 9.3	20 10.6	+ 8 23.7	+0.3752	.5510	.2896	+65	−25
χ Virginis	5	2.52	17.2	7 19.7	**18** 23 40.2	+10 55.6	−0.4703	.5539	.2783	+18	−72
B. A. C. 4259	6	2.52	17.2	7 22.0	23 43.7	+10 59.0	−0.4499	.5540	.2784	+19	−70
28 Virginis	6	+2.52	−17.3	− 6 50.0	**19** 0 51.3	−11 55.8	−1.2844	.5542	−.2773	−34	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MARCH.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	Y	*x*′	*y*′	N'n.	S'n.
		s	″	°	d h m	h m				°	°
B. A. C. 4312	6½	+2.50	-17.3	- 9 40.8	**19** 4 57.0	- 7 58.8	+0.3791	.5551	-.2735	+63	-24
ψ Virginis	5	2.50	17.5	8 52.9	6 15.1	- 6 43.5	-0 7603	.5554	.2725	+ 2	-90
g Virginis	6	2.50	17.4	10 5.5	12 7.0	- 1 4.3	-1.1492	.5571	.2654	-24	-90
i Virginis	6	2.48	17.3	12 4.6	20 12.5	+ 6 43.9	-1.3026	.5596	.2548	-40	-90
75 Virginis	6	2.47	16.9	14 44.5	22 48.5	+ 9 14.2	+0.6719	.5606	.2510	+75	- 9
83 Virginis	6	+2.46	-16.8	-15 34.2	**20** 3 44.6	-10 0.4	+0.2755	.5623	-.2431	+52	-29
85 Virginis	6	2.45	16.9	15 9.6	4 12.6	- 9 33.5	-0.2442	.5624	.2424	+25	-58
B. A. C. 4722	6	2.42	16.2	17 38.1	16 42.5	+ 2 28.9	-0.6767	.5669	.2195	0	-90
B. A. C. 4739	6	2.42	16.1	18 9 2	18 2.5	+ 3 45.9	-0.4500	.5674	.2166	+12	-72
B. A. C. 4923	6	2.36	14.7	20 52.0	**21** 9 54.8	- 4 57.6	-0.9009	.5728	.1815	-17	-90
B. A. C. 4984	6	+2.35	-13.7	-23 31.3	14 58.3	- 0 5.7	+0.8939	.5743	-.1690	+67	+ 7
B. A. C. 5023	6	2.32	14.0	21 57.1	17 38.1	+ 2 28.0	-1.1368	.5750	.1622	-36	-90
42 Libræ	5½	2.28	13.0	23 25.4	**22** 3 13.5	+11 41.2	-1.0837	.5764	.1471	-35	-90
B. A. C. 5197	6	2.28	12.6	24 20.0	5 26.3	-10 11.2	-0.4524	.5775	.1309	+ 3	-73
b Scorpii	5	2.27	12.1	25 22.9	7 28.2	- 8 14.0	+0.3589	.5778	.1255	+45	-25
A^2 Scor., *mult.*	5	+2.26	-12.0	-24 57.9	8 32.0	- 7 12.7	-0.1993	.5779	-.1224	+15	-56
B. A. C. 5253	6	2.24	12.3	24 10.3	8 39.6	- 7 5.3	-1.0275	.5780	.1221	-32	-90
B. A. C. 5255	6	2.26	12.0	25 3.0	8 46.1	- 6 59.1	-0.1411	.5780	.1219	+18	-52
3 Scorpii	6	2.25	12.1	24 53.1	8 57.1	- 6 48.6	-0.3317	.5780	.1213	+ 8	-64
4 Scorpii	6	2.26	11.8	25 54.6	9 16.2	- 6 30.2	+0.6789	.5780	.1205	+64	- 6
B. A. C. 5286	6½	+2.24	-12.2	-24 28.8	10 31.5	- 5 17.8	-0.9345	.5781	-.1170	-25	-90
π Scorpii	3	2.26	11.8	25 45.9	10 36.5	- 5 13.0	+0.3719	.5781	.1168	+45	-23
B. A. C. 5314	6	2.24	11.7	25 31.7	12 24.6	- 3 29.1	-0.0767	.5783	.1117	+20	-48
B. A. C. 5347	5	2.23	11.3	26 0.1	14 17.8	- 1 40.3	+0.2047	.5784	.1063	+35	-32
σ Scorpii	6½	2.18	11.1	25 18.1	19 31.5	+ 3 21.2	-1.0356	.5787	.0914	-35	-90
α Scorpii	5½	+2.16	-10.6	-26 9.8	22 47.9	+ 6 29.0	-0.4299	.5786	-.0821	0	-72
τ Scorpii	3½	2.17	9.8	27 57.8	**23** 1 19.5	+ 8 55.7	+1.2354	.5785	.0746	+62	+43
B. A. C. 5800	6½	2.01	8.6	26 50.3	16 41.8	- 0 17.9	-0.7367	.5761	.0299	-22	-90
A^1 Ophiuchi	5½	2.00	8.6	26 25.4	17 11.0	+ 0 10.2	-1.1855	.5759	.0284	-52	-90
A^2 Ophiuchi	6	2.00	8.6	26 25.4	17 11.1	+ 0 10.3	-1.1869	.5759	.0284	-53	-90
38 Ophiuchi	6½	+1.99	- 8.6	-26 29.7	18 5.1	+ 1 2.2	-1.1363	.5756	-.0259	-49	-90
43 Ophiuchi	6	1.99	7.9	28 1.4	20 20.9	+ 3 12.7	+0.4145	.5750	-.0193	+39	-20
3 Sagittarii	5	1.90	6.9	27 47.0	**24** 6 11.1	-11 19.6	+0.1138	.5713	+.0088	+21	-37
B. A. C. 6024	6½	1.86	7.1	27 1.3	7 21.0	-10 12.4	-0.6794	.5708	.0122	-20	-90
B. A. C. 6063	6½	1.85	6.6	28 2.8	9 56.0	- 7 43.2	+0.4456	.5696	.0195	+41	-18
B. A. C. 6072	6½	+1.86	- 6.1	-28 44.5	10 42.9	- 6 58.1	+1.1970	.5692	+.0217	+61	+38
B. A. C. 6120	6½	1.81	5.9	28 22.3	14 5.2	- 3 43.4	+0.8954	.5676	.0311	+62	+10
B. A. C. 6127	5	1.80	5.8	28 28.2	14 37.3	- 3 12.6	+1.0177	.5673	.0326	+62	+19
B. A. C. 6191	6½	1.78	5.4	28 19.5	18 30.1	+ 0 31.6	+1.0118	.5652	.0432	+62	+19
B. A. C. 6194	5½	1.74	5.8	27 5.2	18 48.9	+ 0 49.7	-0.2921	.5650	.0441	+ 3	-62
φ Sagittarii	3½	+1.60	- 4.6	-27 7.0	**25** 6 30.5	-11 54.5	+0.4296	.5580	+.0741	+45	-19
σ Sagittarii	2½	1.56	4.5	26 26.9	10 40.6	- 7 53.3	+0.0436	.5552	.0844	+24	-41
B. A. C. 6490	6½	1.52	4.6	25 1.0	13 50.9	- 4 49.8	-1.2162	.5530	.0921	-51	-90
B. A. C. 6592	6½	1.48	3.9	26 6.7	18 33.3	- 0 17.3	+0.4231	.5497	.1031	+47	-20
ψ Sagittarii	5½	1.45	4.0	25 27.9	19 35.7	+ 0 42.9	-0.1667	.5490	.1055	+16	-54
χ^1 Sagittarii	6	+1.40	- 3.9	-24 44.7	23 57.5	+ 4 55.6	-0.4643	.5458	+.1153	+ 2	-74
χ^2 Sagittarii	6½	1.39	3.9	24 39.2	**26** 0 0.5	+ 4 58.5	-0.5583	.5458	.1153	- 3	-83
χ^3 Sagittarii	6	1.39	4.0	24 12.0	0 4.6	+ 5 2.6	-1.0402	.5458	.1155	-33	-90
B. A. C. 6699	6½	1.33	3.7	23 34.5	4 40.7	+ 9 29.2	-1.1655	.5424	.1255	-42	-90
h^1 Sagittarii	6	1.35	3.2	24 59.1	4 49.2	+ 9 37.4	+0.3826	.5423	.1258	+47	-23
h^2 Sagittarii	5½	1.34	3.2	25 9.1	5 7.3	+ 9 54.9	+0.6008	.5421	.1265	+60	-10
53 Sagittarii	6	+1.32	- 3.5	-23 42.2	6 35.2	+11 19.8	-0.7840	.5410	+.1295	-14	-90
B. A. C. 6727	6½	1.31	3.5	23 42.3	6 43.2	+11 27.5	-0.7637	.5409	.1298	-13	-90
B. A. C. 6864	6	1.20	3.0	23 4.3	16 36.7	- 2 58.7	-0.0717	.5336	.1494	+25	-48
B. A. C. 6878	6½	1.19	2.9	22 56.2	17 43.1	- 1 54.4	-0.0530	.5327	.1515	+26	-47
4 Capricorni	6	1.12	2.6	22 11.2	**27** 0 32.8	+ 4 42.0	+0.2044	.5277	.1637	+41	-32
B. A. C. 7202	6	+0.95	- 2.5	-18 38.9	15 33.9	- 4 45.1	-1.0311	.5172	+.1878	-23	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N'n.	S'n.
MARCH.											
		s	″	° ′	d h m	h m				°	°
B. A. C. 7209	6½	+0.94	− 2.6	−18 29.1	**27** 16 2.0	− 4 17.8	−1.1215	.5169	+.1885	−29	−90
19 Capricorni	6	0.91	2.3	18 23.0	18 47.7	− 1 37.2	−0.7084	.5152	.1925	− 2	−90
20 Capricorni	6	0.90	1.8	19 30.4	21 12.5	+ 0 43.3	+0.9965	.5136	.1958	+71	+12
21 Capricorni	6	0.88	2.2	18 0.3	21 52.9	+ 1 22.5	−0.5243	.5132	.1967	+ 8	−77
θ Capricorni	4	0.86	2.1	17 43.0	**28** 0 28.9	+ 3 53.8	−0.3267	.5115	.2002	+19	−63
31 Capricorni	6½	+0.82	− 1.6	−17 58.3	6 51.6	+10 5.1	+1.2575	.5076	+.2082	+72	+34
ι Capricorni	4½	0.80	1.6	17 21.2	8 57.2	−11 52.9	+1.0134	.5064	.2107	+73	+13
B. A. C. 7487	6½	0.71	2.1	14 1.5	15 22.1	− 5 39.0	−1.2903	.5028	.2178	−41	−90
42 Capricorni	6	0.69	1.5	14 35.4	19 15.0	− 1 52.8	+0.1882	.5008	.2217	+48	−34
44 Capricorni	6	0.69	1.3	14 57.4	20 3.4	− 1 5.8	+0.7737	.5004	.2225	+71	− 3
45 Capricorni	6	+0.68	− 1.2	−15 18.6	20 33.6	− 0 36.5	+1.2753	.5001	+.2230	+75	+35
μ Capricorni	5	0.64	1.2	14 7.5	**29** 1 34.1	+ 4 15.5	+1.0929	.4978	.2276	+76	+18
B. A. C. 7697	6½	0.56	1.5	11 2.5	9 17.9	+11 46.5	−0.5407	.4945	.2340	+17	−77
e^1 Aquarii	6	0.56	1.1	11 25.2	11 3.8	−10 30.5	+0.2947	.4939	.2354	+57	−28
e^2 Aquarii	6	0.57	1.0	12 9.8	11 6.7	−10 27.7	+1.1308	.4939	.2354	+78	+20
B. A. C. 7774	6	+0.52	− 1.4	− 9 38.9	14 36.5	− 7 3.7	−0.8331	.4926	+.2355	− 3	−90
67 Aquarii	6	0.42	0.7	7 36.0	**30** 5 24.0	+ 7 20.8	+0.4785	.4855	.2463	+70	−19
B. A. C. 7986	6	0.36	0.7	5 38.2	12 11.5	−10 3.6	−0.0195	.4871	.2494	+42	−45
B. A. C. 8094	6	+0.31	− 0.1	− 4 9.5	23 49.9	+ 1 16.3	+1.2610	.4858	+.2528	+86	+30
APRIL.											
15 Arietis	6	+0.11	+ 6.0	+18 55.6	**3** 23 47.1	− 1 25.3	−1.2434	.5170	+.2030	−33	−71
θ Arietis	5½	0.13	6.2	19 20.3	**4** 3 32.6	+ 2 13.4	−0.9399	.5195	.1978	− 9	−71
26 Arietis	6½	0.17	6.6	19 18.9	9 43.4	+ 8 12.7	+0.2808	.5236	.1888	+60	−19
ν Arietis	5½	0.17	7.0	21 26.1	13 41.0	−11 57.1	−1.3002	.5263	.1826	−44	−69
μ Arietis	5½	0.20	7.0	19 29.6	15 25.8	−10 15.6	+1.1374	.5276	.1797	+90	+32
ε Arietis, *mult.*	4½	+0.25	+ 7.6	+20 51.2	23 27.6	− 2 29.2	+1.0414	.5331	+.1661	+90	+27
64 Arietis	6	0.34	8.8	24 17.6	**5** 11 4.3	+ 8 44.5	−0.8956	.5412	.1437	− 8	−66
7 Tauri, *mult.*	6	0.38	8.9	24 3.4	15 41.7	−10 47.5	+0.0063	.5443	.1346	+44	−27
11 Tauri	6	0.42	9.1	24 56.1	18 31.9	− 8 3.1	−0.5727	.5462	.1284	+12	−58
g Pleiadum	5½	0.44	9.0	23 54.4	20 21.8	− 6 17.0	+0.7720	.5474	.1245	+90	+14
b Pleiadum	4	+0.44	+ 9.0	+23 43.9	20 23.9	− 6 14.8	+0.9663	.5474	+.1244	+90	+26
m Pleiadum	7	0.43	9 1	24 27.4	20 30.6	− 6 8.4	+0.1952	.5474	.1242	+55	−16
e Pleiadum	5	0.44	9.1	24 5.1	20 32.4	− 4 6.7	+0.5999	.5475	.1241	+87	+ 5
c Pleiadum	5	0.44	9.0	23 59.3	20 49.1	− 5 50.6	+0.7408	.5477	.1236	+90	+13
d Pleiadum	5	0.44	8.8	23 34.2	21 3.1	− 5 37.0	+1.2215	.5479	.1230	+90	+48
η Tauri	3	+0.45	+ 8.9	+23 43.7	21 33.8	− 5 7.4	+1.1117	.5482	+.1217	+90	+37
f Pleiadum	4	0.45	8.9	23 40.9	22 18.8	− 4 23.9	+1.2537	.5486	.1202	+90	+52
h Pleiadum	5½	0.47	8.9	23 45.9	22 19.3	− 4 23.4	+1.1639	.5487	.1202	+90	+42
B. A. C. 1192	6½	0.46	9.3	25 12.6	22 47.7	− 3 56.1	−0.3419	.5490	.1192	+25	−44
p Tauri	6	0.57	9.7	26 9.9	**6** 7 48.6	+ 4 45.9	−0.3879	.5546	.0984	+22	−45
φ Tauri, *mult.*	5	+0.61	+10.0	+27 3.7	11 55.1	+ 8 43.6	−0.9674	.5570	+.0885	−15	−63
χ^1 Tauri	5½	0.63	9.4	25 20.5	12 55.0	+ 9 41.4	+0.9672	.5576	.0860	+90	+31
χ^2 Tauri	8½	0.63	9.4	25 20.8	12 55.3	+ 9 41.7	+0.9627	.5576	.0860	+90	+30
B. A. C. 1648	6½	1.00	9.8	27 50.0	**7** 13 29.3	+ 9 21.6	−0.3680	.5688	.0214	+23	−37
β Tauri	2	1.02	10.0	28 30.3	15 39.8	+11 27.1	−1.0402	.5696	.0153	−21	−62
B. A. C. 1746	6½	+1.08	+ 9.5	+27 35.0	19 39.6	− 8 42.2	−0.0230	.5707	+.0042	+42	−16
136 Tauri	5	1.20	9.2	27 35.0	**8** 2 47.8	− 1 50.2	−0.0637	.5722	−.0159	+40	−19
37 Geminorum	6	1.58	6.5	25 31.7	**9** 4 8.7	− 1 27.2	+0.7752	.5720	.0873	+90	+19
39 Geminorum	6½	1.61	6.5	26 14.5	5 33.6	− 0 5.5	−0.0946	.5726	.0912	+38	−27
40 Geminorum	6½	1.61	6.5	26 4.8	5 49.7	+ 0 9.9	+0.0492	.5724	.0946	+47	−20
52 Geminorum	6	+1.70	+ 5.4	+25 5.7	12 5.4	+ 6 11.3	+0.4444	.5715	−.1089	+73	− 2
A Geminorum	5½	1.76	5.1	25 17.1	15 42.2	+ 9 39.9	−0.1638	.5707	.1184	+34	−34
B. A. C. 2514	6½	1.84	4.1	24 29.8	22 12.6	− 8 4.5	−0.1747	.5690	.1353	+34	−36
κ Gemi., *mult.*	3½	1.88	3.8	24 41.4	**10** 0 23.1	− 5 58.8	−0.6739	.5683	.1408	+ 6	−64
84 Geminorum	6½	+1.91	+ 2.7	+22 39.0	3 59.6	− 2 30.4	+0.9039	.5675	−.1498	+90	+20

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
7 Cancri	6½	+1.95	+ 1.9	+22 24.8	10 8 31.4	+ 1 51.2	+0.4419	.5659	-.1608	+72	- 7
μ^1 Cancri	6	1.99	2.0	22 59.0	9 32.5	+ 2 50.1	-0.3085	.5655	.1633	+27	-46
μ^2 Cancri	5	1.97	1.5	21 56.2	10 10.5	+ 3 26.7	+0.6614	.5655	.1647	+90	+ 4
B. A. C. 2788	6½	2.03	+ 0.4	21 8.0	15 29.6	+ 8 34.0	+0.5740	.5635	.1771	+83	- 2
η Cancri	6	2.10	- 0.3	20 51.3	20 44.7	-10 22.6	-0.1023	.5616	.1886	+38	-38
35 Cancri	6½	+2.09	- 0.8	+20 0.4	21 52.5	- 9 17.0	+0.5484	.5612	-.1911	+80	- 5
39 Cancri	6	2.14	0.8	20 26.2	23 54.4	- 7 19.6	-0.2831	.5605	.1953	+28	-48
40 Cancri	6	2.14	0.8	20 24.0	23 56.7	- 7 17.4	-0.2537	.5605	.1954	+30	-46
ε Cancri	6½	2.13	1.1	19 58.4	11 0 3.8	- 7 10.5	+0.1584	.5604	.1956	+53	-25
42 Cancri	6½	2.13	1.1	20 8.9	0 10.6	- 7 4.0	-0.0421	.5604	.1958	+41	-35
B. A. C. 2925	6½	+1.13	- 1.1	+20 0.6	0 16.4	- 6 58.4	+0.0806	.5603	-.1961	+48	-29
δ Cancri	4	2.13	1.9	18 36.1	1 54.9	- 5 23.4	+1.1912	.5597	.1995	+90	+36
80 Cancri	6½	2.26	3.5	18 32.5	13 40.8	+ 5 57.1	-1.2351	.5555	.2219	-31	-72
7 Leonis	6½	2.29	6.0	14 55.2	12 0 13.6	- 7 52.6	-0.0159	.5520	.2394	+43	-39
ψ Leonis	6	0.34	6.7	14 34.6	3 42.0	- 4 31.5	-0.5111	.5509	.2446	+17	-67
ν Leonis	5	+2.38	- 8.0	+13 1.4	10 9.6	+ 1 42.6	-0.5621	.5491	-.2535	+14	-71
URANUS				13 45.3	10 21.4	+ 1 54.0	-1.3437	.5498	.2540	-43	-76
A Leonis	5	2.38	9.4	10 35.5	14 30 9	+ 5 54.8	+0.7527	.5481	.2590	+90	- 1
α Leonis	1½	2.41	8.7	12 33.6	14 42.8	+ 6 6.4	-1.2650	.5481	.2592	-32	-78
B. A. C. 3538	6½	2.43	10.4	9 34.4	20 57.1	-11 52.2	+0.0777	.5468	.2659	+48	-37
44 Leonis	6	+2.44	-10.7	+ 9 24.0	22 18.5	-10 33.6	-0.1109	.5465	-.2673	+38	-47
B. A. C. 3562	6½	2.44	10.7	9 23.4	22 27.9	-10 24.5	-0.1419	.5465	.2673	+36	-49
45 Leonis	6	2.45	10.6	10 22.8	23 22.8	- 9 31.5	-1.3737	.5464	.2682	-46	-80
48 Leonis	6	2.45	11.9	7 34.7	13 2 38.1	- 6 22.9	+0.5358	.5459	.2712	+76	-14
49 Leonis	6	2.47	11.1	9 16.6	2 43.5	- 6 17.7	-1.1771	.5459	.2713	-23	-81
37 Sextantis	6	+2.46	-12.4	+ 7 0.7	7 44.1	- 1 27.4	-0.2966	.5454	-.2753	+28	-59
d Leonis	5	2 49	13.8	4 16.1	14 18.0	+ 4 53.1	+0.6017	.5451	.2794	+82	-12
p^3 Leonis	6	2.49	14.4	2 36.8	17 12.3	+ 7 41.5	+1.4246	.5451	.2809	+90	+57
B. A. C. 3836	6	2.54	14.7	2 54.8	20 20.9	+10 43.5	+0.2416	.5451	.2823	+57	-32
75 Leonis	6	2.53	14.9	2 40.6	21 53.0	-11 47.5	+0.0417	.5452	.2828	+46	-41
76 Leonis	6	+2.54	-15.0	+ 2 18.9	22 37.7	-11 4.3	+0.1885	.5453	-.2831	+54	-33
79 Leonis	6	2.55	15.2	+ 2 4.4	14 0 56.7	- 8 50.0	-0.2287	.5454	.2837	+32	-56
υ Leonis	4½	2.56	16.2	- 0 9.3	15 6 47.1	- 3 11.5	+0.3092	.5459	.2847	+61	-28
χ Virginis	5	2.67	18.9	7 19.7	10 37.2	- 0 19.2	-0.4754	.5529	.2847	+18	-72
B. A. C. 4259	6	2.67	18.9	7 22.0	10 40.8	- 0 15.7	-0.4544	.5529	.2847	+19	-71
28 Virginis	6	+2.68	-18.8	- 6 50.1	11 48.7	+ 0 49.8	-1.2888	.5534	-.2745	-35	-90
B. A. C. 4312	6⅓	2.69	19.2	9 40.8	15 55.5	+ 4 47.9	+0.3900	.5551	.2710	+63	-23
ψ Virginis	5	2.69	19.2	8 52.9	17 13.7	+ 6 3.3	-0.7482	.5556	.2697	+ 3	-90
g Virginis	6	2.73	19.5	10 5.6	23 5.9	+11 43.0	-1.1225	.5581	.2636	-22	-90
i Virginis	6	2.77	19.6	12 4.7	16 7 10.3	- 4 30.0	-1.2546	.5617	.2534	-35	-90
75 Virginis	6	+2.77	-19.7	-14 44.5	9 45.6	- 2 0.4	+0.7234	.5630	-.2497	+76	- 5
83 Virginis	6	2.80	19.4	15 34.3	14 39.7	+ 2 43.0	+0.3381	.5654	.2422	+56	-26
85 Virginis	6	2.80	19.4	15 9.7	15 7.5	+ 3 9.7	-0.1796	.5657	.2412	+28	-54
B. A. C. 4722	6	2.83	19.0	17 38.1	17 3 29.5	- 8 55.9	-0.5822	.5720	.2192	+ 5	-82
B. A. C. 4739	6	2 85	18.8	18 9.3	4 48.4	- 7 40.0	-0.3534	.5727	.2165	+17	-65
B. A. C. 4923	6	+2.90	-17.6	-20 52.0	20 24.8	+ 7 20.6	-0.7686	.5799	-.1816	- 9	-90
B. A. C. 4984	6	2.93	16.7	23 31.3	18 1 22.3	-11 53.5	+1.0202	.5820	.1692	+67	+16
B. A. C. 5023	6	2.92	16.7	21 57.1	3 58.7	- 9 23.3	-0.9872	.5830	.1626	+25	-90
42 Libræ	5½	2.94	15.3	23 25.4	13 21.1	- 0 23.1	-0.9175	.5857	.1373	-23	-90
B. A. C. 5197	6	2.94	15.1	24 20.0	15 30.6	+ 1 41.3	-0.2886	.5863	.1313	+11	-61
b Scorpii	5	2.96	14.6	25 23.0	17 29.7	+ 3 35.6	+0.5169	.5867	.1257	+54	-15
A^2 Scorpii, *mult.*	5	+2.94	-14.5	-24 57.9	18 31.8	+ 4 35.3	-0.0352	.5869	-.1228	+23	-46
B. A. C. 5253	6	2.94	14.6	24 10.3	18 39.4	+ 4 42.5	-0.8527	.5870	.1224	-20	-90
B. A. C. 5255	6	2.95	14.4	25 3.0	18 45.5	+ 4 48.4	+0.0239	.5870	.1220	+26	-42
3 Scorpii	6	2.95	14.4	24 53.2	18 56.3	+ 4 58.7	-0.1643	.5870	.1216	+17	-53
4 Scorpii	6	2.97	14.3	25 54.6	19 50.0	+ 5 16.7	+0.8354	.5871	.1207	+64	+ 5
B. A. C. 5286	6½	+2.98	-14.4	-24 28.9	20 28.4	+ 6 27.2	-0.7580	.5873	-.1172	+15	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
π Scorpii	3	+2.96	-14.1	-25 45.9	**18** 20 33.2	+ 6 31.8	+0.5342	.5873	-.1169	+54	-14
B. A. C. 5314	6	2.95	13.9	25 31.7	22 18.5	+ 8 12.9	+0.0936	.5876	.1120	+29	-38
B. A. C. 5347	5	2.95	13.6	26 0.2	**19** 0 8.9	+ 9 58.9	+0.3745	.5878	.1065	+44	-23
σ Scorpii	6½	2.93	13.0	25 18.1	5 14.4	- 9 7.9	-0.8441	.5882	.0914	-22	-90
α Scorpii	5½	2.94	12.4	26 9.8	8 24.6	- 6 5.4	-0.2411	.5882	.0818	+ 9	-58
B. A. C. 5800	6½	+2.88	- 9.5	-26 50.4	**20** 1 50.0	+10 38.2	-0.5215	.5857	-.0294	-10	-80
A¹ Ophiuchi	5½	2.86	9.6	26 25.5	2 18.4	+11 5.5	-0.9638	.5856	.0280	-36	-90
A² Ophiuchi	6	2.86	9.6	26 25.4	2 18.5	+11 5.6	-0.9649	.5856	.0280	-36	-90
38 Ophiuchi	6½	2.85	9.5	26 39.7	3 11.0	+11 56.1	-0.9139	.5854	.0254	-33	-90
43 Ophiuchi	6	2.87	9.0	28 1.4	5 23.0	- 9 57.2	+0.6190	.5846	-.0186	+53	- 8
3 Sagittarii	5	+2.78	- 7.3	-27 47.1	14 57.0	- 0 45.8	+0.3321	.5806	+.0100	+34	-25
B. A. C. 6024	6½	2.76	7.2	27 1.3	16 5.1	+ 0 19.6	-0.4497	.5801	.0129	- 8	-74
B. A. C. 6063	6½	2.76	6.5	28 2.8	18 35.8	+ 2 44.4	+0.6631	.5788	.0205	+57	- 5
B. A. C. 6120	6½	2.74	5.7	28 22.3	22 38.3	+ 6 37.5	+1.1110	.5764	.0322	+62	+28
B. A. C. 6127	5	2.74	5.6	28 28.2	23 9.7	+ 7 7.7	+1.2320	.5761	.0336	+62	+44
B. A. C. 6191	6½	+2.69	- 5.1	-28 19.5	**21** 2 56.4	+10 45.7	+1.2308	.5738	+.0442	+62	+44
B. A. C. 6194	5½	2.66	5.3	27 5.2	3 14.7	+11 3.3	-0.0569	.5736	.0451	+15	-47
φ Sagittarii	3½	2.56	3.5	27 6.9	14 38.7	- 1 58.5	+0.6647	.5658	.0757	+60	- 6
σ Sagittarii	2½	2.49	3.2	26 26.8	18 42.8	+ 1 56.7	+0.2862	.5627	.0860	+37	-27
B. A. C. 6490	6½	2.44	3.3	25 1.0	21 48.7	+ 4 55.8	-0.9561	.5604	.0936	-29	-90
B. A. C. 6562	6½	+2.41	- 2.1	-26 6.7	**22** 2 24.8	+ 9 21.9	+0.6659	.5566	+.1047	+62	- 6
ψ Sagittarii	5	2.38	2.2	25 27.9	3 25.9	+10 20.8	+0.0839	.5557	.1070	+29	-39
B. A. C. 6576	6	2.36	2.7	24 23.3	3 27.3	+10 22.1	-1.0617	.5557	.1071	-35	-90
χ¹ Sagittarii	6	2.31	1.7	24 44.6	7 42.0	- 9 32.2	-0.2085	.5522	.1168	+15	-56
χ² Sagittarii	6½	2.31	1.7	24 39.1	7 45.0	- 9 29.3	-0.3012	.5522	.1169	+10	-62
χ³ Sagittarii	6	+2.30	- 1.9	-24 12.0	7 49.0	- 9 25.4	-0.7775	.5522	+.1170	-16	-90
B. A. C. 6699	6½	2.24	1 5	23 34.4	12 19.5	- 5 4.3	-0.8997	.5483	.1269	-22	-90
h¹ Sagittarii	6	2.27	1.0	24 59.1	12 27.9	- 4 56.3	+0.6310	.5482	.1272	+62	- 8
h² Sagittarii	5½	2.27	0.9	25 9.1	12 45.6	- 4 39.2	+0.8472	.5480	.1279	+65	+ 5
53 Sagittarii	6	2.23	1.2	23 42.1	14 11.8	- 3 15.9	-0.5214	.5468	.1310	0	-79
B. A. C. 6727	6½	+2.23	- 1.2	-23 42.3	14 19.5	- 3 8.5	-0.5021	.5466	+.1312	+ 1	-77
B. A. C. 6864	6	2.10	0.2	23 54.3	**23** 0 2.3	+ 6 14.5	+0.1850	.5384	.1506	+38	-34
B. A. C. 6878	6½	2.09	0.1	22 56.2	1 7.6	+ 7 17.7	+0.2043	.5375	.1527	+40	-32
B. A. C. 6889	6	2.06	- 0.4	21 39.4	1 43.3	+ 7 52.2	-1.0859	.5370	.1538	-32	-90
4 Capricorni	6	1.99	+ 0.6	22 11.1	7 50.8	-10 12.4	+0.4601	.5318	.1649	+56	-18
JUPITER				-19 12.4	18 13.8	- 0 9.3	-0.9748	.5198	+.1791	-20	-90
B. A. C. 7202	6	+1.76	+ 1.1	18 38.8	22 39.8	+ 4 8.4	-0.7665	.5199	.1883	- 6	-90
B. A. C. 7209	6½	1.76	1.0	18 29.1	23 7.6	+ 4 35.4	-0.8560	.5196	.1889	-11	-90
19 Capricorni	6	1.73	1.3	18 22.9	**24** 1 51.4	+ 7 14.1	-0.4470	.5176	.1928	+12	-90
20 Capricorni	6	1.72	1.9	19 30.4	4 14.8	+ 9 33.1	+1.2445	.5175	.1928	+70	+35
21 Capricorni	6	+1.69	+ 1.5	-18 0.3	4 54.7	+10 11.9	-0.2649	.5153	+.1970	+22	-59
θ Capricorni	4	1.64	1.4	17 42.9	7 29.2	-11 18.3	-0.0696	.5135	.2003	+32	-47
29 Capricorni	6	1.58	1.4	15 40.6	12 32.9	- 6 23.7	-1.2756	.5100	.2065	-41	-90
ι Capricorni	4½	1.57	2.3	17 21.1	15 53.1	- 3 9.4	+1.2589	.5041	.2104	+73	+35
B. A. C. 7487	6½	1.46	1.8	14 1.5	22 15.2	+ 3 1.6	-1.0366	.5039	.2173	-19	-90
42 Capricorni	6	+1.83	+ 2.4	-14 35.3	**25** 2 6.7	+ 6 46.5	+0.4313	.5017	+.2211	+62	-21
44 Capricorni	6	1.43	2.6	14 57.4	2 54.8	+ 7 33.2	+1.0134	.5013	.2218	+75	+13
μ Capricorni	5	1.37	2.9	14 7.5	8 23.8	-11 7.2	+1.3274	.4983	.2267	+76	+41
B. A. C. 7697	6½	1.27	2.5	11 2.4	16 5.8	- 3 38.0	-0.3070	.4946	.2329	+25	-61
e¹ Aquarii	6	1.23	2.7	11 25.1	17 51.3	- 1 55.4	+0.5235	.4939	.2342	+70	-16
e² Aquarii	6	1.25	3.0	12 9.8	17 54.1	- 1 52.7	+1.3561	.4939	.2342	+78	+44
B. A. C. 7774	6	+1.20	+ 2.5	+ 9 38.8	21 23.3	+ 1 30.6	-0.6044	.4925	+.2366	+10	-83
67 Aquarii	6	1.04	3.0	7 35.9	**26** 12 8.8	- 8 6.9	+0.6821	.4881	.2445	+83	- 8
B. A. C. 7986	6	0.97	2.9	- 5 38.2	18 55.8	- 1 31.7	+0.1765	.4865	.2475	+52	-34
15 Piscium	6½	0.75	2.9	+ 0 38.4	**27** 17 57.8	- 3 6.3	-1.0186	.4851	.2521	-11	-90
λ Piscium	5	0.71	3.1	1 6.6	21 43.4	+ 0 33.4	-0.5922	.4854	.2522	+13	-81
B. A. C. 8276	6½	+0.69	+ 3.2	+ 1 32.4	**28** 1 34.6	+ 4 18.4	-0.0980	.4858	+.2521	+38	-49

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

APRIL.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
21 Piscium	6	+0.69	+ 3.5	+ 0 24.0	**28** 1 56.5	+ 4 39.8	+1.2581	.4858	+.2521	+90	+30
22 Piscium	6	0.68	3.2	2 15.2	3 22.4	+ 6 3.4	-0.4374	.4860	.2520	+21	-69
25 Piscium	6½	0.68	3.4	1 24.8	4 0.3	+ 6 40.3	+0.6530	.4861	.2518	+86	-10
45 Piscium	6	0.52	3.5	7 1.1	22 26.2	+ 0 36.6	-0.9436	.4905	.2476	- 7	-83
51 Pisc., *mult.*	6½	0.52	3.8	6 17.0	**29** 2 10.9	+ 4 15.2	+0.7930	.4917	.2462	+90	- 1
75 Piscium	6½	+0.40	+ 4.1	+12 18.3	20 54.1	- 1 32.6	-1.3354	.4998	+.2356	-41	-78
η Piscium	3½	+0.34	+ 4.7	+14 43.1	**30** 10 8.4	+11 19.1	-0.9389	.5071	+.2245	- 8	-76
MAY.											
η Tauri	3	+0.40	+ 7.7	+23 43.7	**3** 3 23.8	+ 2 30.0	+0.9754	.5527	+.1209	+90	+28
f Pleiadum	4	0.41	7.7	23 40.9	4 8.3	+ 3 12.9	+1.1153	.5532	.1193	+90	+38
p Tauri	6	0.46	8.2	26 9.9	13 32.2	-11 43.1	-0.5373	.5592	.1191	+14	-54
φ Tauri, *mult.*	5	0.49	8.4	27 3.6	17 36.2	- 7 48.0	-1.1220	.5616	.0872	-28	-63
χ¹ Tauri	5½	0.50	8.2	25 20.5	18 35.6	- 6 50.7	+0.8046	.5621	.0847	+90	+21
χ³ Tauri	8½	+0.50	+ 8.2	+25 20.8	18 35.9	- 6 50.4	+0.8002	.5621	+.0847	+90	+20
B. A. C. 1648	6½	0.73	8.4	27 50.0	**4** 18 58.6	- 7 21.8	-0.5652	.5722	.0200	+11	-50
β Tauri	2	0.76	8.6	28 30.3	21 8.4	- 5 16.9	-1.2405	.5728	.0140	-47	-62
B. A. C. 1746	6½	0.82	8.3	27 35.0	**5** 1 7.0	- 1 27.4	-0.2296	.5737	+.0028	+30	-27
136 Tauri	5	0.89	8.1	27 35.0	8 14.0	+ 5 23.4	-0.2800	.5746	-.0172	+27	-31
ε Geminorum	6	+1.14	+ 6.4	+25 15.1	**6** 4 57.2	+ 1 19.3	+1.2050	.5737	-.0755	+90	+51
37 Geminorum	6	1.20	6.1	25 31.7	9 37.0	+ 5 48.4	+0.5327	.5727	.0882	+80	+ 5
39 Geminorum	6½	1.24	6.2	26 14.5	11 2.3	+ 7 10.5	-0.3419	.5724	.0920	+24	-41
40 Geminorum	6½	1.24	6.2	26 4.8	11 18.6	+ 7 26.1	-0.1975	.5723	.0927	+32	-34
48 Geminorum	6	1.30	5.2	24 20.0	16 42.2	-11 22.5	+1.0867	.5708	.1071	+90	+37
52 Geminorum	6	+1.31	+ 5.4	+25 5.7	17 36.9	-10 29.9	+0.1932	.5705	-.1095	+55	-14
A Geminorum	5½	1.36	5.0	25 17.1	21 15.6	- 6 59.3	-0.4206	.5693	.1189	+20	-48
B. A. C. 2514	6½	1.44	4.2	24 29.8	**7** 3 50.1	- 0 39.4	-0.4368	.5669	.1355	+20	-51
κ Gemi., *mult.*	3½	1.48	4.1	24 41.4	6 2.2	+ 1 27.7	-0.9406	.5660	.1409	-11	-66
84 Geminorum	6½	1.50	3.1	22 39.0	9 41.5	+ 4 58.9	+0.6448	.5646	.1494	+90	+ 5
7 Cancri	6½	+1.56	+ 2.4	+22 24.8	14 17.2	+ 9 24.5	+0.1770	.5626	-.1601	+54	-20
μ¹ Cancri	6	1.58	2.5	22 59.0	15 19.4	+10 24.5	-0.5793	.5621	.1626	+12	-62
μ² Cancri	5	1.57	2.1	21 56.2	15 57.9	+11 1.6	+0.3976	.5619	.1640	+68	-10
B. A. C. 2788	6½	1.63	1.3	21 8.0	21 22.4	- 7 45.8	+0.3075	.5595	.1758	+62	-15
B. A. C. 2854	6½	1.67	0.1	19 23.8	**8** 2 18.3	- 3 0.5	+1.2025	.5572	.1861	+90	+39
η Cancri	6	+1.68	+ 0.6	+20 51.3	2 43.4	- 2 36.3	-0.3760	.5569	-.1871	+23	-53
35 Cancri	6½	1.69	0.2	20 0.4	3 52.5	- 1 29.6	+0.2804	.5564	.1893	+60	-18
39 Cancri	6	1.73	0.2	20 26.2	5 56.9	+ 0 30.3	-0.5599	.5554	.1935	+13	-64
40 Cancri	6	1.73	+ 0.2	20 24.1	5 59.2	+ 0 32.5	-0.5301	.5554	.1936	+15	-62
ε Cancri	6½	1.71	- 0.1	19 58.4	6 6.4	+ 0 39.4	-0.1142	.5554	.1937	+37	-39
42 Cancri	6½	+1.71	- 0.1	+20 8.9	6 13.5	+ 0 46.4	-0.3167	.5553	-.1940	+26	-50
B. A. C. 2925	6½	1.72	0.2	20 0.6	6 19.3	+ 0 51.9	-0.2093	.5553	.1940	+33	-44
δ Cancri	4½	1.74	0.8	18 36.1	7 59.0	+ 2 28.1	+0.9292	.5545	.1974	+90	+16
π² Cancri	6	1.85	3.5	15 26.8	21 33.2	- 8 26.2	+1.3089	.5484	.2216	+90	+46
7 Leonis	6½	1.94	4.6	14 55.2	**9** 6 51.6	+ 0 33.1	-0.2863	.5447	.2357	+28	-53
ψ Leonis	6	+1.99	- 5.4	+14 34.6	10 25.8	+ 3 20.5	-0.7874	.5434	-.2406	+ 1	-69
18 Leonis	6	1.97	6.3	12 22.2	11 40.3	+ 5 12.0	+1.1582	.5430	.2422	+90	+27
ν Leonis	5	2.03	6.7	13 1.5	17 4.8	+10 25.4	-0.8352	.5413	.2489	- 1	-77
Λ Leonis	5	2.06	8.0	10 35.6	21 33.9	- 9 14.6	+0.5021	.5403	.2542	+74	-15
B. A. C. 3538	6½	2.11	9.0	9 34.5	**10** 4 12.2	- 2 49.5	-0.1758	.5384	.2606	+34	-51
44 Leonis	6	2.13	9.2	9 24.1	5 36.2	- 1 28.3	-0.3666	.5381	.2619	+24	-62
B. A. C. 3562	6½	+2.13	- 9.2	+ 9 23.4	5 45.9	- 1 18.9	-0.3974	.5379	-.2629	+23	-64
48 Leonis	6	2.16	10.5	7 34.7	10 4.1	+ 2 50.7	+0.2963	.5373	.2656	+60	-27
37 Sextantis	6	2.20	11.2	7 0.7	15 20.1	+ 7 56.0	-0.5424	.5367	.2694	+15	-75
d Leonis	5	2.25	12.6	4 16.1	22 6.7	- 9 30.6	+0.3802	.5362	.2732	+65	-23
*p*³ Leonis	6	2.26	13.3	2 36.8	**11** 1 6.8	- 6 36.4	+1.2204	.5362	.2746	+90	+27
B. A. C. 3836	6	+2.29	-13.6	+ 2 54.8	4 21.6	- 3 28.0	+0.0245	.5363	-.2758	+45	-43

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
75 Leonis	6	+2.31	-13.8	+ 2 40.6	**11** 5 56.7	- 1 56.1	-0.1754	.5363	-.2763	+34	-53
76 Leonis	6	2.32	14.0	2 18.9	6 42.8	- 1 11.5	-0.0248	.5364	.2766	+42	-45
79 Leonis	6	2.33	14.5	+ 2 4.4	9 6.3	+ 1 7.3	-0.4437	.5365	.2771	+21	-69
υ Leonis	4½	2.37	15.5	- 0 9.3	15 8.1	+ 6 57.2	+0.1149	.5372	.2781	+50	-37
χ Virginis	5	2.63	18.9	7 19.7	**12** 19 47.7	+10 39.3	-0.6138	.5457	.2693	+10	-83
B. A. C. 4259	6	+2.63	-18.9	- 7 22.0	19 51.4	+10 42.9	-0.5924	.5457	-.2692	+12	-81
B. A. C. 4312	6½	2.67	19.6	9 40.8	**13** 1 14.2	- 8 5.5	+0.2776	.5482	.2651	+56	-29
ψ Virginis	5	2.69	19.4	8 52.9	2 34.3	- 6 48.1	-0.8726	.5488	.2639	- 5	-90
g Virginis	6	2.75	19.9	10 5.6	8 34.9	- 1 0.0	-1.2337	.5519	.2580	-32	-90
ι Virginis	6	2.82	20.2	13 20.3	16 49.7	+ 6 57.4	-1.3434	.5564	.2483	-47	-90
75 Virginis	6	+2.85	-20.5	-14 44.5	19 28.0	+ 9 30.1	+0.6633	.5579	-.2448	+75	- 8
83 Virginis	6	2.90	20.6	15 34.3	**14** 0 27.5	- 9 41.2	+0.2877	.5610	.2375	+53	-28
85 Virginis	6	2.91	20.5	15 9.7	0 55.9	- 9 13.8	-0.2334	.5612	.2368	+25	-57
B. A. C. 4722	6	3.04	20.3	17 38.2	13 28.8	+ 2 51.6	-0.6034	.5687	.2163	+ 4	-84
B. A. C. 4739	6	3.06	20.2	18 9.3	14 48.6	+ 4 8.4	-0.3692	.5699	.2127	+16	-65
B. A. C. 4923	6	+3.22	-19.2	-20 52.1	**15** 6 33.3	- 4 42.9	-0.7423	.5791	-.1786	- 8	-90
B. A. C. 4984	6	3.29	18.7	23 31.4	11 32.1	+ 0 4.3	+1.0659	.5819	.1666	+67	+20
B. A. C. 5023	6	3.29	18.3	21 57.2	14 9.0	+ 2 35.1	-0.9410	.5831	.1600	-22	-90
42 Libræ	5½	3.37	17.1	23 25.5	23 32.0	+11 36.0	-0.8455	.5872	.1352	-19	-90
B. A. C. 5197	6	3.40	16.8	24 20.1	**16** 1 41.3	-10 19.9	-0.2208	.5880	.1293	+15	-57
b Scorpii	5	+3.43	-16.5	-25 23.0	3 40.1	- 8 25.9	+0.6139	.5887	-.1237	+60	- 9
A^2 Scorp., *mult.*	5	3.43	16.4	24 58.1	4 42.0	- 7 26.4	+0.0512	.5891	.1207	+28	-40
B. A. C. 5253	6	3.42	16.3	24 10.4	4 49.5	- 7 19.3	-0.7670	.5891	.1203	-15	-90
B. A. C. 5255	6	3.44	16.4	25 3.1	4 55.7	- 7 13.2	+0.1100	.5892	.1200	+31	-37
3 Scorpii	6	3.44	16.3	24 53.2	5 6.4	- 7 3.0	-0.0776	.5892	.1194	+21	-48
4 Scorpii	6	+3.47	-16.2	-25 54.7	5 25.0	- 6 45.2	+0.9228	.5893	-.1186	+64	+11
B. A. C. 5286	6½	3 43	16.1	24 28.9	6 38.2	- 5 34.9	-0.6677	5896	.1152	-10	-90
π Scorpii	3	3.46	16.0	25 46.0	6 43.1	- 5 30.2	+0.6244	.5897	.1149	+60	- 8
B. A. C. 5314	6	3.47	15.7	25 31.8	8 28.0	- 3 49.5	+0.1884	.5901	.1099	+34	-33
B. A. C. 5347	5	3.49	15.2	26 0.2	10 17.9	- 2 4.1	+0.4727	.5906	.1039	+50	-17
σ Scorpii	6½	+3.49	-14.4	-25 18.1	15 21.6	+ 2 47.5	-0.7316	.5915	-.0896	-16	-90
α Scorpii	5½	3.52	13.8	26 9.8	18 30.6	+ 5 48.8	-0.1228	.5919	.0802	+15	-51
B. A. C. 5800	6½	3.56	10.3	26 50.4	**17** 11 45.6	- 1 38.1	-0.3641	.5909	.0275	- 2	-67
A^1 Ophiuchi	5½	3.55	10.3	26 25.5	12 13.7	- 1 11.1	-0.8032	.5908	.0260	-26	-90
A^2 Ophiuchi	6	3.55	10.3	26 25.4	12 13.8	- 1 11.0	-0.8043	.5908	.0260	-26	-90
38 Ophiuchi	6½	+3.55	-10.1	-26 29.7	13 5.5	- 0 21.4	-0.7520	.5907	-.0234	-23	-90
43 Ophiuchi	6	3.58	9.5	28 1.4	15 15.9	+ 1 43.8	+0.7780	.5901	.0168	+62	+ 2
B. A. C. 5909	6½	3.53	9.0	26 10.7	18 33.5	+ 4 53.4	-1.1644	.5892	.0079	-52	-90
3 Sagittarii	5	3.56	7.5	27 47.1	**18** 0 41.8	+10 47.0	+0.5109	.5866	.0118	+45	-14
B. A. C. 6024	6½	3.54	7.5	27 1.3	1 48.8	+11 51.2	-0.2637	.5862	.0152	+ 2	-60
B. A. C. 6063	6½	+3.56	- 6.8	-28 2.8	4 17.3	- 9 46.2	+0.8468	.5851	+.0227	+62	+ 7
B. A. C. 6194	5½	3.47	4.9	27 5.2	12 47.6	- 1 35.9	+0.1472	.5804	.0472	+26	-35
B. A. C. 6369	6	3.36	3.2	25 8.2	23 42.1	+ 8 53.6	-1.2170	.5728	.0771	-52	-90
φ Sagittarii	3½	3.41	2.6	27 6.9	23 59.5	+ 9 10.3	+0.8827	.5726	.0777	+63	+ 9
σ Sagittarii	2½	3.36	1.9	26 26.8	**19** 3 59.1	-10 59.1	+0.5138	.5695	.0883	+51	-14
B. A. C. 6490	6½	+3.29	- 1.5	-25 1.0	7 1.6	- 8 3.3	-0.7137	.5670	+.0961	-14	-90
B. A. C. 6562	6½	3.28	0.5	26 6.7	11 32.5	- 3 42.5	+0.9026	.5634	.1071	+64	+ 9
ψ Sagittarii	5	3.27	0.4	25 27.9	12 32.5	- 2 44.6	+0.3267	.5626	.1095	+42	-25
B. A. C. 6576	6	3.24	- 0.7	24 23.3	12 34.0	- 2 43.2	-0.8093	.5626	.1096	-18	-90
χ^1 Sagittarii	6	3.21	+ 0.2	24 44.6	16 43.8	+ 1 17.6	+0.0433	.5589	.1193	+28	-41
χ^2 Sagittarii	6½	3.21	0.2	24 39.1	16 46.8	+ 1 20.5	-0.0483	.5589	.1194	+23	-46
χ^3 Sagittarii	6	+3.20	+ 0.2	-24 11.9	16 50.6	+ 1 24.1	-0.5205	.5588	+.1197	- 1	-78
B. A. C. 6699	6½	3.13	0.8	23 34.4	21 16.1	+ 5 40.1	-0.6352	.5550	.1295	- 6	-90
h^1 Sagittarii	6	3.17	1.3	24 59.1	21 24.3	+ 5 48.0	+0.8827	.5549	.1298	+65	+ 8
h^2 Sagittarii	5½	3.16	1.4	25 9.0	21 41.7	+ 6 4.9	+1.0970	.5546	.1305	+65	+24
53 Sagittarii	6	3.12	1.3	23 42.1	23 6.2	+ 7 26.4	-0.2572	.5533	.1336	+14	-59
B. A. C. 6727	6½	+3.12	+ 1.2	-23 42.2	23 13.8	+ 7 33.7	-0.2380	.5531	+.1338	+15	-58

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

MAY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6864	6	+3.01	+ 2.7	-23 4.2	20 8 45.8	- 7 14.1	+0.4556	.5446	+.1532	+54	-18
B. A. C. 6878	6½	2.99	2.8	22 56.1	9 50 0	- 6 12.1	+0.4761	.5436	.1553	+56	-17
B. A. C. 6889	6	2.96	2.6	21 39.4	10 25.1	- 5 38.1	-0.8024	.5431	.1565	-13	-90
4 Capricorni	6	2.91	3.9	22 11.0	16 26.0	+ 0 10.6	+0.7377	.5376	.1674	+67	- 3
υ Capricorni	5½	2.72	4.3	18 33.9	21 2 56.8	+10 21.0	-1.3104	.5284	.1846	-51	-90
Jupiter				-18 55.4	5 36.2	-11 4.6	-0.4294	.5258	+.1887	+12	-70
B. A. C. 7202	6	+2.67	+ 4.9	18 38.7	7 0.0	- 9 43.5	-0.4646	.5250	.1906	+10	-73
B. A. C. 7209	6½	2.66	5.0	18 29.0	7 27.3	- 9 17.1	-0.5535	.5246	.1913	+ 6	-80
19 Capricorni	6	2.63	5.3	18 22.9	10 8.6	- 6 40.8	-0.1454	.5224	.1951	+27	-51
21 Capricorni	6	2.59	5.7	18 0.2	13 9.1	- 3 45.9	+0.0371	.5200	.1991	+37	-41
θ Capricorni	4	+2.56	+ 5.9	-17 42.8	15 41.3	- 1 18.4	+0.2323	.5180	+.2023	+48	-31
29 Capricorni	6	2.46	5.8	15 40.5	20 40.6	+ 3 31.8	-0.9607	.5142	.2083	-15	-90
B. A. C. 7487	6½	2.34	6.3	14 1.3	22 6 15.4	-11 10.5	-0.7206	.5075	.2187	+ 1	-90
42 Capricorni	6	2.30	7.2	14 35.3	10 4.2	- 7 28.4	+0.7382	.5049	.2223	+75	- 4
44 Capricorni	6	2.30	7.4	14 57.3	10 51.7	- 6 42.3	+1.3170	.5044	.2230	+75	+40
B. A. C. 7697	6½	+2.10	+ 7.4	-11 2.3	23 54.4	+ 5 58.3	+0.0058	.4970	+.2335	+41	-43
e¹ Aquarii	6	2.09	7.8	11 25.1	23 1 39.1	+ 7 10.0	+0.8312	.4961	.2347	+79	+ 1
B. A. C. 7774	6	2.03	7.6	9 38.7	5 9.4	+11 4.5	-0.2916	.4945	.2370	+26	-60
ρ Aquarii	5½	1.99	7.2	8 25.8	6 59.6	-11 8.3	-1.1934	.4937	.2381	-27	-90
67 Aquarii	6	1.86	7.9	7 35.9	19 49.0	+ 1 20.1	+0.9840	.4891	.2442	+83	+10
B. A. C. 7986	6	+1.78	+ 7.9	- 5 38.1	24 2 33.8	+ 7 54.0	+0.4742	.4872	+.2469	+71	-19
B. A. C. 8152	6½	1.57	7.1	- 0 22.7	18 41.8	- 0 23.8	-1.3259	.4849	.2501	-37	-90
15 Piscium	6½	1.49	7.6	+ 0 38.4	25 1 31.9	+ 6 15.4	-0.7422	.4848	.2505	+ 5	-84
λ Piscium	5	1.46	7.6	1 6.7	5 17.2	+ 9 54.8	-0.3219	.4850	.2505	+27	-61
B. A. C. 8276	6½	1.43	7.8	1 32.4	9 8.1	-10 20.5	+0.1657	.4853	.2502	+52	-35
22 Piscium	6	+1.40	+ 7.7	+ 2 15.3	10 55.8	- 8 35.6	-0.1762	.4856	+.2500	+34	-53
25 Piscium	6½	1.41	7.9	1 24.9	11 33.6	- 7 58.9	+0.9118	.4856	.2500	+90	+ 5
45 Piscium	6	1.22	7.2	7 1.1	26 5 59.3	+ 9 57.4	-0.7147	.4897	.2454	+ 6	-83
51 Pisc., *mult.*	6½	1.20	7.7	6 17.1	9 43.9	-10 24.1	+1.0113	.4910	.2439	+90	+12
75 Piscium	6½	1.04	6.8	12 18.3	27 4 26.6	+ 7 47.6	-1.1521	.4991	.2332	-23	-78
η Piscium	3½	+0.93	+ 7.0	+14 43.1	17 30.9	- 3 21.8	-0.7865	.5067	+.2223	+ 1	-68
101 Piscium	6	0.94	7.2	14 2.4	19 54.7	- 1 10.8	+0.4551	.5081	.2201	+71	-15
104 Piscium	6½	0.93	7.4	13 40.2	21 43.2	+ 0 34.6	+1.2563	.5094	.2182	+90	+37
105 Piscium	6	0.91	6.9	15 47.3	21 54.9	+ 0 45.9	-1.0219	.5094	.2180	-14	-74
3 Arietis	6½	0.89	6.8	16 48.2	28 1 27.9	+ 4 12.6	-1.3643	.5119	.2144	-52	-73
4 Arietis	6½	+0.89	+ 7.0	+16 21.1	2 17.3	+ 5 0.5	-0.6934	.5125	+.2135	+ 6	-74
ι Arietis	6	0.85	7.0	17 13.4	6 56.7	+ 9 31.6	-0.6642	.5159	.2081	+ 8	-72
B. A. C. 632	6	0.85	7.0	17 40.2	10 8.7	-11 22.2	-0.4910	.5182	.2042	+17	-63
15 Arietis	6	0.82	7.0	18 55.6	13 34.1	- 8 3.1	-1.1692	.5207	.1998	-27	-71
θ Arietis	5½	0.80	7.0	19 20.3	17 16.4	- 4 27.7	-0.8855	.5236	.1947	- 6	-71
26 Arietis	6½	+0.79	+ 7.3	+19 18.9	23 21.5	+ 1 25.9	+0.2984	.5283	+.1858	+61	-18
ν Arietis	5½	0.76	7.0	21 26.1	29 3 15.3	+ 5 12.3	-1.2888	.5314	.1797	-43	-69
μ Arietis	5½	0.77	7.3	19 29.6	4 58.4	+ 6 52.1	+1.1228	.5328	·1770	+90	+32
ε Arietis, *mult.*	4½	0.73	7.6	20 51.2	12 51.5	- 9 30.3	+0.9901	.5392	.1633	+90	+24
64 Arietis	6	+0.70	+ 7.4	+24 17.5	30 0 14.4	+ 1 29.7	-0.9815	.5483	+.1414	-14	-66

JUNE.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
ε Geminorum	3½	+1.05	+ 5.6	+25 15.1	2 11 0.1	+ 9 9.7	+1.0378	.5792	-.0780	+90	+37
37 Geminorum	6	1.09	5.4	25 31.7	15 36.1	-10 25.0	+0.3617	.5782	.0908	+66	- 4
39 Geminorum	6½	1.10	5.4	26 14.5	17 0.0	- 9 4.4	-0.5101	.5778	.0946	+15	-51
40 Geminorum	6½	1.10	5.3	26 4.8	17 16.1	- 8 48.9	-0.3672	.5777	.0953	+23	-43
ω Geminorum	6	+1.11	+ 5.0	+24 23.3	18 30.2	- 7 37.6	+1.2694	.5773	-.0987	+90	+58
48 Geminorum	6	1.14	4.6	24 20.0	22 35.3	- 3 41.9	+0.9001	.5760	.1096	+90	+24
52 Geminorum	6	1.14	4.7	25 5.7	23 29.3	- 2 50.0	+0.0092	.5757	.1120	+44	-24
A Geminorum	5½	1.19	4.5	25 17.1	3 3 5.3	+ 0 37.8	-0.6072	.5744	.1214	+ 9	-60
Mars				+23 30.1	4 9.3	+ 1 39.3	+1.1156	.5508	-.1221	+90	+38

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 2514	6½	+1.24	+ 3.7	+24 29.8	3 9 35.0	+ 6 52.7	−0.6343	.5715	−.1379	+ 8	−63
κ Gem., *mult.*	3½	1.28	3.7	24 41.4	11 45.6	+ 8 58.5	−1.1389	.5705	.1433	−28	−66
84 Geminorum	6½	1.29	2.9	22 39.0	15 22.6	−11 32.6	+0.4335	.5688	.1520	+71	− 6
7 Cancri	6½	1.33	2.4	22 24.8	19 55.7	− 7 9.6	−0.0389	.5664	.1627	+41	−32
μ¹ Cancri	6	1.34	2.5	22 59.0	20 57.2	− 6 10.4	−0.7941	.5659	.1650	− 1	−67
μ² Cancri	5½	+1.33	+ 2.2	+21 56.1	21 35.5	− 5 33.5	+0.1797	.5656	−.1663	+55	−21
B. A. C. 2788	4	1.38	1.4	21 8.0	4 2 57.3	− 0 23.5	+0.0811	.5627	.1781	+48	−27
B. A. C. 2854	6	1.41	0.5	19 23.8	7 51.3	+ 4 19.9	+0.9665	.5599	.1882	+90	+20
η Cancri	6	1.44	0.9	20 51.3	8 16.2	+ 4 43.9	−0.6081	.5597	.1890	+10	−66
35 Cancri	6½	1.43	0.5	20 0.4	9 24.9	+ 5 50.2	+0.0439	.5591	.1914	+46	−30
39 Cancri	6	+1.46	+ 0.6	+20 26.2	11 28.7	+ 7 49.5	−0.7960	.5580	−.1953	− 1	−70
40 Cancri	6	1.46	0.6	20 24.1	11 30.9	+ 7 51.6	−0.7659	.5579	.1956	+ 1	−66
ε Cancri	6	1.45	0.2	19 58.5	11 38.0	+ 7 58.4	−0.3520	.5579	.1957	+24	−52
42 Cancri	6½	1.46	0.3	20 9.0	11 45.1	+ 8 5.3	−0.5540	.5578	.1959	+13	−63
B. A. C. 2925	6½	1.46	+ 0.3	20 0.7	11 50.9	+ 8 10.8	−0.4310	.5577	.1961	+20	−57
δ Cancri	4	+1.46	− 0.3	+18 36.1	13 30.1	+ 9 46.4	+0.6880	.5569	−.1991	+90	+ 2
π¹ Cancri	6½	1.54	2.5	15 29.1	5 1 45.3	− 2 24.1	+1.2984	.5502	.2205	+90	+45
π² Cancri	6	1.56	2.6	15 26.8	3 2.3	− 1 9.8	+1.0549	.5495	.2226	+90	+22
7 Leonis	6½	1.65	3.6	14 55.3	12 21.5	+ 7 50.3	−0.5490	.5447	.2361	+15	−69
ψ Leonis	6	1.67	4.1	14 34.7	15 56.3	+11 17.8	−1.0524	.5430	.2408	−15	−76
18 Leonis	6	+1.67	− 5.1	+12 22.2	17 11.0	−11 30.0	+0.8960	.5425	−.2423	+90	+ 9
B. A. C. 3345	6	1.66	5.3	11 59.5	17 43.4	−10 58.7	+1.1508	.5422	.2431	+90	+26
ν Leonis	5	1.73	5.4	13 1.5	22 37.2	− 6 14.8	−1.1054	.5401	.2489	−19	−77
A Leonis	5	1.76	6.7	10 35.6	6 3 8.3	− 1 52.7	+0.2295	.5383	.2534	+56	−29
B. A. C. 3538	6½	1.83	7.7	9 34.5	9 50.0	+ 4 35.8	−0.4479	.5361	.2595	+20	−67
44 Leonis	6	+1.84	− 7.9	+ 9 24.1	11 14.9	+ 5 57.8	−0.6397	.5357	−.2607	+10	−79
B. A. C. 3562	6½	1.84	7.9	9 23.4	11 24.7	+ 6 7.3	−0.6707	.5356	.2607	+ 8	−81
48 Leonis	6	1.86	9.0	7 34.7	15 45.7	+10 19.7	+0.0268	.5344	.2640	+45	−40
35 Sextant. *mult.*	6	1.89	10.1	5 23.1	19 48.4	− 9 45.4	+1.1792	.5335	.2665	+90	+25
37 Sextantis	6	1.92	9.6	7 0.8	21 5.7	− 8 30.7	+0.8158	.5333	.2673	0	−83
d Leonis	5	+1.97	−11.2	+ 4 16.1	7 3 58.4	− 1 51.4	+0.1145	.5321	−.2707	+49	−37
p³ Leonis	6	1.98	12.0	2 36.8	7 1.3	+ 1 5.6	+0.9634	.5318	.2718	+90	+ 9
B. A. C. 3836	6	2.03	12.2	2 55.8	10 19.4	+ 4 17.2	−0.2567	.5315	.2728	+30	−57
75 Leonis	5½	2.04	12.3	2 40.6	11 56.2	+ 5 51.0	−0.4402	.5314	.2732	+21	−69
76 Leonis	6	2.04	12.6	2 18.9	12 43.2	+ 6 36.4	−0.2884	.5314	.2734	+28	−59
79 Leonis	5½	+2.06	−12.9	+ 2 4.4	15 9.2	+ 8 57.7	−0.7096	.5314	−.2738	+ 7	−87
υ Leonis	4½	2.12	14.1	− 0 9.3	21 18.2	− 9 5.2	−0.1413	.5316	.2743	+36	−51
B. A. C. 4201	6	2.37	18.1	8 0.3	8 21 22.9	− 9 47.5	+1.2408	.5366	.2675	+82	+29
q Virginis	6	2.42	18.5	8 47.0	9 0 5.4	− 7 10.3	+1.3053	.5374	.2658	+81	+36
χ Virginis	5	2.45	18.2	7 19.7	2 38.0	− 4 42.8	−0.8381	.5384	.2641	− 2	−90
B. A. C. 4259	6	+2.45	−18.2	− 7 21.9	2 41.7	− 4 39.2	−0.8181	.5384	−.2641	− 1	−90
B. A. C. 4312	6½	2.52	19.0	9 40.8	8 13.1	+ 0 41.1	+0.0724	.5407	.2597	+45	−40
ψ Virginis	5	2.52	18.8	8 52.9	9 35.3	+ 2 0.5	−1.0889	.5413	.2586	−19	−90
75 Virginis	6	2.76	20.5	14 44.5	10 2 56.0	− 5 14.3	+0.5000	.5502	.2394	+66	−17
83 Virginis	6	2.84	20.5	15 34.2	8 3.4	− 0 17.6	+0.1303	.5532	.2323	+44	−37
85 Virginis	6	+2.85	−20.4	−15 9.6	8 32.4	+ 0 10.3	−0.3980	.5535	−.2315	+17	−67
B. A. C. 4722	6	3.02	20.6	17 38.2	21 24.8	−11 24.7	−0.7410	.5615	.2103	− 4	−90
B. A. C. 4739	6½	3.06	20.5	18 9.3	22 46.8	−10 5.7	−0.5012	.5625	.2072	+ 9	−75
B. A. C. 4923	6	3.31	19.8	20 52.1	11 14 53.8	+ 5 25.5	−0.8404	.5725	.1744	−14	−90
B. A. C. 4984	6	3.42	19.7	23 31.4	19 59.0	+10 19.1	+1.0009	.5755	.1626	+67	+15
B. A. C. 5023	6	3.42	19.2	21 57.2	22 39.4	−11 6.7	−1.0221	.5770	.1512	−28	−90
42 Libræ	5½	+3.59	−17.8	−23 25.5	12 8 13.3	− 1 54.9	−0.9026	.5820	−.1315	−22	−90
B. A. C. 5197	6	3.63	17.7	24 20.1	10 25.2	+ 0 11.9	−0.2560	.5830	.1257	+13	−59
b Scorpii	5	3.67	17.6	25 23.0	12 25.8	+ 2 7.7	+0.5668	.5838	.1202	−58	−12
A² Scorpii, *mult.*	5	3.67	17.3	24 58.0	13 28.8	+ 3 8.2	+0.0150	.5842	.1175	+26	−43
B. A. C. 5253	6	3.66	17.1	24 10.3	13 36.4	+ 3 15.5	−0.8100	.5843	.1172	−18	−90
B. A. C. 5255	6	+3.68	−17.3	+25 3.1	13 42.8	+ 3 21.7	+0.0749	.5843	−.1169	+29	−39

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
3 Scorpii	6	+3.68	-17.2	-24 53.2	**12** 13 53 7	+ 3 32.1	-0.1140	.5844	-.1164	+19	-50
4 Scorpii	6	3.71	17.3	25 54.7	14 12.5	+ 3 50.2	+0.8958	.5845	.1156	+64	+ 9
B. A. C. 5286	6½	3.69	16.9	24 29.5	15 27.1	+ 5 1.9	-0.6957	.5851	.1147	-12	-90
π Scorpii	3	3.72	17.1	25 46.0	15 31.9	+ 5 6.5	+0.5972	.5851	.1145	+58	-10
B. A. C. 5314	6	3.73	16.7	25 31.7	17 18.5	+ 6 48.9	+0.1613	.5857	.1069	+32	-34
B. A. C. 5347	5	+3.75	-16.4	-26 0 2	19 10.1	+ 8 36.1	+0.4530	.5863	-.1016	+48	-18
σ Scorpii	3½	3.80	15.4	25 18.3	**13** 0 18.3	-10 27.9	-0.7485	.5878	.0869	-17	-90
α Scorpii	1½	3.85	14.9	26 9.8	3 29.7	- 7 24.2	-0.1280	.5885	.0776	+14	-51
B. A. C. 5800	6½	4.00	11.1	26 50.4	20 55.3	+ 9 19.5	-0.3307	.5894	.0251	- 1	-64
A¹ Ophiuchi	5½	4.01	11.0	26 25.5	21 23.7	+ 9 46.8	-0.7707	.5893	.0239	-24	-90
A² Ophiuchi	6	+4.01	-11.0	-26 25.4	21 28.8	+ 9 46.9	-0.7720	.5893	-.0239	-25	-90
38 Ophiuchi	6½	4.01	10.8	26 29.7	22 15.8	+10 36.8	-0.7176	.5892	.0212	-21	-90
43 Ophiuchi	6	4.06	10.3	28 1.5	**14** 0 27.1	-11 17.2	+0.8253	.5889	.0145	+62	+ 5
B. A. C. 5909	6½	4.03	9.5	26 10.6	3 46.0	- 8 6.1	-1.1200	.5882	-.0045	-49	-90
3 Sagittarii	5	4.10	8.0	27 47.1	9 56.0	- 2 10.8	+0.5762	.5865	+.0140	+50	-10
B. A. C. 6024	6½	+4.08	- 7.7	-27 1.3	11 3.2	- 1 6.3	-0.1986	.5861	+.0173	+ 6	-55
B. A. C. 6063	6½	4.11	7.1	28 2.8	13 32.2	+ 1 16.8	+0.9196	.5852	.0247	+62	+12
B. A. C. 6194	6	4.09	4.9	27 5.2	22 3.2	+ 9 27.7	+0.2361	.5812	.0493	+31	-30
λ Sagittarii	3	4.04	4.1	25 29.3	**15** 2 5.1	-10 39.7	-1.2134	.5790	.0605	-53	-90
B. A. C. 6369	6	4.03	2.2	25 8.2	8 57.1	- 4 3.5	-1.1054	.5747	.0793	-42	-90
φ Sagittarii	3½	+4.09	- 1.9	-27 6.9	9 14.4	- 3 46.8	+0.9945	.5745	+.0801	+63	+17
σ Sagittarii	2½	4.06	1.2	26 26.8	13 13.3	+ 0 3.0	+0.6337	.5717	.0906	+60	- 8
B. A. C. 6490	6½	4.00	- 0.5	25 1.0	16 15.1	+ 2 58.0	-0.5859	.5696	.0983	- 7	-85
B. A. C. 6562	6½	4.03	+ 0.7	26 6.6	20 44.8	+ 7 17.8	+1.0359	.5661	.1095	+64	+20
ψ Sagittarii	6	3.99	0.8	25 27.9	21 44.3	+ 8 15.2	+0.4635	.5654	.1120	+50	-17
B. A. C. 6576	6	+3.97	+ 0.6	-24 23.2	21 45.8	+ 8 16.6	-0.6724	.5654	+.1120	-10	-90
χ¹ Sagittarii	6	3.96	1.8	24 44.6	**16** 1 54.4	-11 43.8	+0.1891	.5620	.1215	+36	-33
χ² Sagittarii	6½	3.96	1.8	24 39.0	1 57.3	-11 41.0	+0.0964	.5619	.1218	+31	-38
χ³ Sagittarii	6	3.94	1.8	24 11.9	2 1.1	-11 37.4	-0.3740	.5618	.1220	+ 7	-67
B. A. C. 6699	6½	3.88	2.5	23 34.4	6 24.8	- 7 23.2	-0.4797	.5581	.1320	+ 2	-75
h¹ Sagittarii	6	+3.93	+ 2.9	-24 59.0	6 32.9	- 7 15.4	+1.0344	.5581	+.1322	+65	+19
h² Sagittarii	4½	3.94	2.9	25 9.0	6 50.2	- 6 58.6	+1.2494	.5578	.1329	+65	+42
53 Sagittarii	6	3.88	3.1	23 42.1	8 14.2	- 5 37.6	-0.1000	.5566	.1360	+22	-49
B. A. C. 6727	6½	3.89	3.1	23 42.2	8 21.8	- 5 30.4	-0.0796	.5565	.1362	+23	-48
B. A. C. 6864	6	3.81	4.9	23 4.2	17 49.2	+ 3 37.3	+0.6283	.5483	.1558	+64	- 9
B. A. C. 6878	6½	+3.79	+ 5.2	-22 56.1	18 52.8	+ 4 38.6	+0.6512	.5474	+.1578	+66	- 7
B. A. C. 6889	6	3.75	5.1	21 39.3	19 27.7	+ 5 12.3	-0.6223	.5469	.1590	- 2	-83
4 Capricorni	6	3.72	6.5	22 11.0	**17** 1 25.1	+10 57.7	+0.9230	.5416	.1701	+68	+ 9
υ Capricorni	5½	3.52	7.7	18 33.9	11 49.7	- 2 58.3	-1.1000	.5324	.1873	-29	-90
JUPITER				19 13.5	12 51.1	- 1 58.8	-0.1964	.5351	.1899	+24	-55
B A. C. 7202	6	+3.51	+ 8.5	-18 38.7	15 50.4	+ 0 54.8	-0.2521	.5290	+.1932	+21	-58
B. A. C. 7209	6½	3.50	8.6	18 29.0	16 17.5	+ 1 20.9	-0.3392	.5287	.1939	+17	-64
19 Capricorni	6	3.48	9.0	18 22.9	18 56.9	+ 3 55.3	+0.0719	.5265	.1976	+38	-39
21 Capricorni	6	3.43	9.4	18 0.2	21 55.5	+ 6 48.3	+0.2573	.5240	.2016	+49	-29
θ Capricorni	4	3.40	9.7	17 42.8	**18** 0 26.0	+ 9 14.2	+0.4553	.5220	.2049	+61	-19
29 Capricorni	6	+3.32	+ 9.9	-15 40.4	5 22.1	- 9 58.8	-0.7269	.5181	+.2109	- 1	-90
B. A. C. 7487	6½	3.19	11.1	14 1.2	14 50.8	- 0 47.2	-0.4764	.5110	.2211	+14	-73
42 Capricorni	5	3.18	11.8	14 35.3	18 37.1	+ 2 52.4	+0.9822	.5084	.2247	+76	+11
λ Capricorni	5½	3.10	11.1	11 55.5	21 15.5	+ 5 26.2	-1.3250	.5067	.2270	-44	-90
B. A. C. 7697	6½	2.98	12.5	11 2.2	**19** 8 19.4	- 7 49.0	+0.2639	.5000	.2355	+55	-30
e¹ Aquarii	6	2.98	12.8	11 25.0	10 3.2	- 6 8.1	+1.0874	.4991	.2368	+79	+17
B. A. C. 7774	6	+2.91	+12.6	- 9 38.6	13 31.4	- 2 45.7	-0.0289	.4973	+.2388	+39	-45
ρ Aquarii	5½	2.88	12.4	8 25.8	15 20.6	- 0 59.5	-0.9260	.4964	.2400	- 8	-90
67 Aquarii	6	2.75	13.4	7 35.8	**20** 4 4.1	+11 23.0	+1.2508	.4911	.2457	+83	+30
B. A. C. 7986	6	2.65	13.4	5 38.0	10 46.5	- 6 5.5	+0.7451	.4889	.2479	+82	- 5
B. A. C. 8152	6½	2.45	13.0	- 0 22.6	**21** 2 50.0	+ 9 32.2	-1.0522	.4858	.2504	-14	-90
15 Piscium	6½	+2.37	13.1	+ 0 38.6	9 38.8	- 7 49.9	-0.4716	.4852	+.2505	+19	-73

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JUNE.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	Y	*x′*	*y′*	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
16 Piscium	6	+2.36	+13.1	+ 1 25.7	**21** 10 10.3	- 7 19.2	-1.2092	.4852	+.2504	-26	-89
λ Piscium	5	2.33	13.2	1 6.8	13 23.6	- 4 11.1	-0.0528	.4852	.2502	+40	-46
19 Piscium	6	2.30	12.7	2 48.8	15 51.8	- 1 46.8	-1.3164	.5852	.2499	-37	-87
B. A. C. 8276	6½	2.30	13.0	1 32.5	17 14.3	- 0 26.4	+0.4331	.5853	.2497	+68	-21
22 Piscium	6	2.28	13.1	2 15.4	19 1.8	+ 1 18.1	+0.0912	.4854	.2495	+48	-38
25 Piscium	6	+2.27	+13.4	+ 1 25.0	19 39.7	+ 1 55.0	+1.1771	.4855	+.2494	+90	+23
45 Piscium	6	2.08	12.4	7 1.2	**22** 14 6.0	- 4 8.1	-0.4611	.4885	.2441	+20	-69
51 Pisc., *mult.*	6	2.04	12.9	6 17.2	17 51.0	- 0 29.1	+1.2624	.4897	.2425	+90	+32
75 Piscium	6	1.87	11.7	12 18.3	**23** 12 37.5	- 6 13.7	-0.9238	.4972	.2311	- 7	-78
η Piscium	3½	1.76	11.1	14 43.2	**24** 1 54.1	+ 6 40.3	-0.5764	.5046	.2201	+13	-71
101 Piscium	6	+1.74	+11.4	+14 2.4	4 9.7	+ 8 51.9	+0.6636	.5061	+.2178	+89	- 4
105 Piscium	6	1.73	10.9	15 47.3	6 10.4	+10 49.2	-0.8185	.5073	.2158	- 1	-74
3 Arietis	6½	1.70	10.7	16 48.2	9 44.3	- 9 43.3	-1.1660	.5097	.2120	-26	-73
4 Arietis	6	1.70	10.9	16 21.1	10 34.1	- 8 54.9	-0.4955	.5102	.2112	+17	-64
ι Arietis	6	1.66	10.8	17 13.4	15 14.7	- 4 22.7	-0.4747	.5135	.2058	+18	-62
B. A. C. 632	6	+1.63	10.5	17 40.2	18 27.6	- 1 15.6	-0.3055	.5158	+.2019	+27	-52
15 Arietis	6	1.61	10.1	18 55.6	21 54.0	+ 1 4.6	-0.9904	.5183	.1976	-13	-71
θ Arietis	5½	1.57	10.1	19 20.3	**25** 1 37.1	+ 5 40.8	-0.7138	.5212	.1924	+ 5	-71
26 Arietis	6	1.54	10.3	19 18.9	7 43.8	+11 36.1	+0.4609	.5261	.1836	+72	-10
ν Arietis	5½	1.52	9.6	21 26.1	11 38.3	- 8 36.8	-1.1345	.5293	.1775	-25	-69
μ Arietis	5½	+1.51	+10.2	+19 29.6	13 21.8	- 6 56.7	+1.2756	.5307	+.1748	+90	+48
ε Arietis, *mult.*	4½	1.47	9.8	20 51.2	21 16.2	+ 0 42.2	+1.1275	.5373	.1613	+90	+34
64 Arietis	6	1.41	8.7	24 17.6	**26** 8 40.2	+11 43.3	-0.8638	.5469	.1394	- 6	-66
7 Tauri, *mult.*	6	1.39	8.8	24 3.4	13 11.8	- 7 54.5	+0.0009	.5506	.1300	+43	-27
11 Tauri	6	1.35	8.6	24 56.1	15 58.3	- 5 13.8	-0.5895	.5531	.1239	+10	-59
g Pleiadum	5½	+1.36	+ 8.7	+23 54.4	17 45.7	- 3 30.1	+0.7308	.5545	+.1200	+90	+13
b Pleiadum	4	1.36	8.8	23 43.8	17 47.8	- 3 28.2	+0.9228	.5545	.1200	+90	+24
m Pleiadum	7	1.36	8.6	24 27.4	17 54.4	- 3 21.9	+0.1614	.5546	.1197	+52	-17
e Pleiadum	5	1.36	8.7	24 5.1	17 56.0	- 3 20.3	+0.5599	.5547	.1195	+82	+ 3
c Pleiadum	5	1.36	8.7	23 59.2	18 12.4	- 3 4.5	+0.6969	.5548	.1190	+90	+11
d Pleiadum	5	+1.36	+ 8.7	+23 34.1	18 26.0	- 2 51.3	+1.1714	.5551	+.1185	+90	+43
η Tauri	3	1.35	8.7	23 43.7	18 56.1	- 2 22.3	+1.0597	.5555	.1173	+90	+34
f Pleiadum	4	1.35	8.6	23 40.9	19 40.1	- 1 39.8	+1.1954	.5561	.1157	+90	+46
h Pleiadum	5½	1.35	8.6	23 45.9	19 40.6	- 1 39.4	+1.1071	.5561	.1156	+90	+38
B. A. C. 1192	6	1.35	8.4	25 12.7	20 8.3	- 1 12.6	-0.3864	.5565	.1147	+22	-47
p Tauri	6	+1.32	+ 7.9	+26 9.8	**27** 4 55.9	+ 7 16.1	-0.4837	.5632	+.0938	+16	-50
φ Tauri, *mult.*	5½	1.31	7.7	27 3.6	8 56.0	+11 7.3	-1.0794	.5661	.0839	-24	-63
χ^1 Tauri	5½	1.30	8.0	25 20.5	9 54.3	-11 56.5	+0.8251	.5668	.0813	+90	+22
χ^2 Tauri	8½	+1.30	+ 8.0	+25 20.8	9 54.5	-11 56.2	+0.8202	.5668	+.0813	+90	+22
JULY.											
B. A. C. 2854	6½	+1.38	+ 0.5	+19 23.8	**1** 14 44.6	-10 59.2	+0.8449	.5669	-.1921	+90	+12
η Cancri	6	1.41	0.6	20 51.3	15 9.0	-10 35.8	-0.7151	.5666	.1929	+ 4	-69
35 Cancri	6½	1.39	0.3	20 0.4	16 16.3	- 9 30.9	-0.0703	.5660	.1952	+39	-36
39 Cancri	6	1.42	0.3	20 26.2	18 17.4	- 7 34.3	-0.9059	.5648	.1992	- 7	-70
40 Cancri	6	1.42	0.3	20 24.1	18 19.7	- 7 32.0	-0.8772	.5648	.1991	- 5	-70
ε Cancri	6½	+1.41	+ 0.2	+19 58.4	18 26.7	- 7 25.3	-0.4661	.5647	-.1996	+18	-58
42 Cancri	6½	1.41	0.1	20 8.9	18 33.5	- 7 18.7	-0.6668	.5647	.1998	+ 7	-69
B. A. C. 2925	6½	1.41	+ 0.1	20 0.6	18 39.2	- 7 13.2	-0.5446	.5646	.1999	+14	-63
MARS				19 58.9	18 53.7	- 6 59.2	-0.5665	.5383	.1959	+13	-65
δ Cancri	4	1.40	- 0.3	18 36.1	20 16.3	- 5 39.7	+0.5594	.5637	.2031	+80	- 5
π^1 Cancri	6½	+1.45	- 2.2	+15 29.1	**2** 8 16.0	+ 5 54.2	+1.1468	.5567	-.2245	+90	+29
π^2 Cancri	6	1.45	2.3	15 26.8	9 31.4	+ 7 6.9	+0.9034	.5560	.2266	+90	+12
7 Leonis	6½	1.51	3.3	14 55.3	18 39.4	- 8 4.3	-0.6984	.5509	.2400	+ 6	-75
ψ Leonis	6	1.52	3.7	14 34.7	22 10.1	- 4 41.0	-1.2014	.5491	.2446	-27	-76
18 Leonis	6	+1.51	- 4.3	+12 22.2	23 23.5	- 3 30.1	+0.7289	.5484	-.2461	+90	- 1

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 3345	6	+1.51	- 4.4	+11 59.5	2 23 55.2	- 2 59.5	+0.9806	.5481	-.2468	+90	+14
ν Leonis	5	1.55	4.5	13 1.5	3 4 43.7	+ 1 39.1	-1.2621	.5458	.2523	-33	-77
A Leonis	5	1.58	5.7	10 35.6	9 10.0	+ 5 56.3	+0.0622	.5437	.2568	+47	-37
B. A. C. 3538	6½	1.62	6.6	9 34.5	15 45.2	-11 41.7	-0.6219	.5410	.2626	+11	-78
44 Leonis	6	1.62	6.7	9 24.1	17 8.7	-10 20.9	-0.8136	.5404	·2637	0	-81
B. A. C. 3562	6½	+1.63	- 6.7	+ 9 23.4	17 18.4	-10 11.6	-0.8443	.5404	-.2638	- 1	-81
48 Leonis	6	1.66	7.6	7 34.7	21 35.5	- 6 3.1	-0.1552	.5388	.2669	+35	-50
35 Sext., *mult.*	6	1.67	8.6	5 23.1	4 1 34.9	- 2 11.5	+0.9874	.5376	.2694	+90	+11
37 Sextantis	6	1.70	8.2	7 0.8	2 51.3	- 0 57.7	-0.9972	.5372	.2700	-10	-83
d Leonis	5	1.74	9.7	4 16.2	9 39.0	+ 5 36.6	-0.0759	.5354	.2729	+39	-47
*p*³ Leonis	6	+1.75	-10.5	+ 2 36.9	12 40.0	+ 8 31.7	+0.7675	.5348	-.2737	+90	- 3
B. A. C. 3836	6	1.79	10.6	2 55.8	15 56.3	+11 41.6	-0.4480	.5343	.2745	+20	-69
75 Leonis	5½	1.80	10.8	2 40.6	17 32.2	-10 45.6	-0.6321	.5341	.2748	+11	-84
76 Leonis	6	1.81	10.9	2 19.0	18 18.9	-10 0.4	-0.4812	.5340	.2749	+19	-72
79 Leonis	5½	1.83	11.3	+ 2 4.4	20 43.8	- 7 40.3	-0.9016	.5337	.2752	- 4	-88
ν Leonis	4½	+1.88	-12.5	- 0 9.2	5 2 50.4	- 1 45.6	-0.3368	.5333	+.2753	+26	-62
B. A. C. 4201	6	2.12	16.6	8 0.3	6 2 53.1	- 2 30.0	+1.0495	.5354	.2668	+82	+14
q Virginis	6	2.15	16.9	8 47.0	5 36.2	+ 0 7.8	+1.1151	.5361	.2648	+81	+19
χ Virginis	5	2.19	16.6	7 19.7	8 9.4	+ 2 35.9	-1.0306	.5367	.2629	-14	-90
B. A. C. 4259	6	2.19	16.6	7 21.9	8 13.1	+ 2 40.0	-1.0104	.5368	.2628	-13	-90
B. A. C. 4312	6½	+2.26	-17.6	- 9 40.7	13 46.4	+ 8 1.7	-0.1159	.5385	-.2582	+35	-50
ψ Virginis	5	2.28	17.3	8 52.9	15 9.1	+ 9 21.7	-1.2788	.5389	.2568	-36	-90
75 Virginis	6	2.54	19.4	14 44.4	7 8 39.8	+ 2 17.0	+0.3295	.5462	.2369	+56	-26
83 Virginis	6	2.62	19.7	15 34.2	13 51.2	+ 7 17.6	-0.0379	.5488	.2296	+35	-46
85 Virginis	6	2.63	19.5	15 9.6	14 20.6	+ 7 46.0	-0.5681	.5490	.2288	+ 8	-80
B. A. C. 4722	6	+2.84	-20.0	-17 38.2	8 3 24.7	- 3 37.4	-0.9003	.5559	-.2073	-13	-90
B. A. C. 4739	6½	2.88	20.0	18 9.3	4 48.1	- 2 17.0	-0.6577	.5567	.2047	0	-90
B. A. C. 4923	6	3.19	19.7	20 52.1	21 13.1	-10 27.7	-0.9795	.5661	.1712	-23	-90
B. A. C. 4984	6	3.30	19.9	23 31.4	9 2 24.3	- 5 28.1	+0.8853	.5688	.1594	+67	+ 7
B. A. C. 5023	6	3.32	19.2	21 57.2	5 8.0	- 2 50.5	-1.1532	.5703	.1530	-38	-90
42 Libræ	5½	+3.53	-18.3	-23 25.5	14 53.7	+ 6 33.1	-1.0191	.5749	-.1288	-30	-90
B. A. C. 5197	6	3.58	18.3	24 20.1	17 8.1	+ 8 42.4	-0.3634	.5759	.1230	+ 7	-66
b Scorpii	5	3.64	18.2	25 23.0	19 11.5	+10 41.0	+0.4696	.5767	.1176	+51	-17
A² Scor., *mult.*	5	3.65	17.9	24 58.0	20 15.8	+11 42.8	-0.0857	.5772	.1147	+20	-48
B. A. C. 5253	6	3.63	17.7	24 10.0	20 23.7	+11 50.4	-0.9190	.5772	.1144	-25	-90
B. A. C. 5255	6	+3.65	-17.9	-25 3.1	20 30.2	+11 56.7	-0.0249	.5772	-.1141	+23	-45
3 Scorpii	6	3.66	17.8	24 53.2	20 41.3	-11 52.7	-0.2151	.5773	.1135	+13	-56
4 Scorpii	6	3.69	18.0	25 54.7	21 0.6	-11 34.1	+0.8050	.5774	.1127	+64	+ 3
B. A. C. 5286	6½	3.67	17.5	24 28.9	22 16.7	-10 20.9	-0.8096	.5779	.1094	-18	-90
π Scorpii	3	3.70	17.7	25 46.0	22 21.6	-16 16.2	+0.5055	.5780	.1091	+52	-15
B. A. C. 5314	6	+3.72	-17.6	-25 31.7	10 0 10.4	- 8 31.6	+0.0674	.5786	-.1042	+27	-39
B. A. C. 5347	5	3.76	17.1	26 0.2	2 4.4	- 6 42.1	+0.3647	.5792	.0990	+43	-23
σ Scorpii	3½	3.83	16.0	25 18.2	7 19.0	- 1 39.6	-0.8408	.5808	.0842	-23	-90
α Scorpii	1½	3.91	15.6	26 9.8	10 34.5	+ 1 28.2	-0.2097	.5816	.0751	+10	-56
B. A. C. 5800	6½	4.16	11.8	26 50.4	11 4 20.8	- 5 27.3	-0.3885	.5833	.0234	- 4	-68
A¹ Ophiuchi	5½	+4.16	-11.7	-26 25.5	4 49.7	- 4 59.6	-0.8321	.5832	-.0220	-28	-90
A² Ophiuchi	6	4.16	11.7	26 25.4	4 49.8	- 4 59.5	-0.8333	.5832	.0220	-28	-90
38 Ophiuchi	6½	4.17	11.5	26 29.7	5 42.8	- 4 8.4	-0.7770	.5832	.0193	-25	-90
43 Ophiuchi	6	4.25	11.1	28 1.5	7 56.6	- 2 0.1	+0.7822	.5830	.0129	+62	+ 2
B. A. C. 5909	6½	4.22	10.1	26 10.6	11 19.1	+ 1 14.6	-1.1738	.5825	-.0030	-54	-90
3 Sagittarii	5	4.34	8.6	27 47.1	17 35.5	+ 7 16.2	+0.5455	.5813	+.0158	+48	-12
B. A. C. 6024	6½	+4.33	- 8.2	-27 1.3	18 43.9	+ 8 22.0	-0.2342	.5810	+.0187	+ 4	-58
B. A. C. 6023	6½	4.39	7.7	28 2.8	21 15.2	+10 47.5	+0.8966	.5803	.0259	+62	+10
B. A. C. 6194	6	4.41	5.5	27 5.2	12 5 54.1	- 4 53.6	+0.2202	.5771	.0502	+31	-31
λ Sagittarii	3	4.40	4.1	25 20.3	9 59.3	- 0 57.7	-1.2334	.5752	.0617	-56	-90
B. A. C. 6369	6	4.40	2.2	25 8.2	16 56.6	+ 5 43.8	-1.1138	.5715	.0803	-42	-90
φ Sagittarii	3½	+4.47	- 2.3	-27 6.9	17 14.1	+ 6 0.7	+0.9991	.5713	+.0811	+63	+17

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	°	d h m	h m				°	°
σ Sagittarii	2½	+4.47	− 1.3	−26 26.8	**12** 21 15.7	+ 9 53.2	+0.6418	.5689	+.0915	+60	− 7
B. A. C. 6490	6½	4.43	− 0.5	25 0.9	**13** 0 19.5	−11 9.8	−0.5806	.5669	.0994	− 6	−85
B. A. C. 6562	6½	4.48	+ 0.8	26 6.6	4 51.8	− 6 47.5	+1.0568	.5639	.1105	+64	+21
ψ Sagittarii	6	4.41	1.1	25 27.9	5 51.9	− 5 49.5	+0.4829	.5632	.1128	+52	−16
B. A. C. 6576	6	4.41	1.1	24 23.1	5 53.4	− 5 48.1	−0.6593	.5632	.1128	−10	−90
χ^1 Sagittarii	6	+4.45	+ 2.3	−24 44.6	10 4.1	− 1 46.4	+0.2120	.5602	+.1227	+37	−32
χ^2 Sagittarii	6½	4.44	2.3	24 39.0	10 7.0	− 1 43.6	+0.1193	.5601	.1228	+32	−37
χ^3 Sagittarii	6	4.43	2.3	24 11.9	10 10.8	− 1 40.0	−0.3529	.5601	.1229	+ 8	−65
B. A. C. 6699	6½	4.39	3.4	23 34.4	14 36.5	+ 2 36.2	−0.4527	.5568	.1331	+ 4	−73
h^1 Sagittarii	6	4.45	3.4	24 59.0	14 44.7	+ 2 44.2	+1.0681	.5567	.1334	+65	+22
h^2 Sagittarii	4½	+4.45	+ 3.4	−25 9.0	15 2.1	+ 3 0.9	+1.2844	.5565	+.1341	+65	+49
53 Sagittarii	6	4.40	3.8	23 42.0	16 26.6	+ 4 22.4	−0.0687	.5554	.1369	+24	−47
B. A. C. 6727	6½	4.40	3.8	23 42.2	16 34.3	+ 4 29.9	−0.0486	.5553	.1373	+25	−46
B. A. C. 6864	6	4.38	6.3	23 4.1	**14** 2 4.8	−10 19.3	+0.6756	.5478	.1569	+66	− 6
B. A. C. 6878	6½	4.37	6.5	22 56.0	3 8.6	− 9 17.7	+0.6994	.5470	.1590	+67	− 5
B. A. C. 6889	6	+4.32	+ 6.6	−21 39.3	3 43.6	− 8 43.9	−0.5773	.5465	+.1602	0	−83
4 Capricorni	6	4.32	8.0	22 11.0	9 42.3	− 2 57.3	+0.9808	.5416	.1711	+66	+13
Jupiter				19 58.7	15 46.5	+ 2 54.8	−0.3154	.5422	.0833	+16	−62
υ Capricorni	5½	4.16	10.0	18 33.8	20 7.9	+ 7 7.7	−1.0325	.5332	.1888	−23	−90
B. A. C. 7202	6	4.15	10.8	18 38.6	**15** 0 8.7	+11 0.8	−0.1780	.5300	.1948	+25	−54
B. A. C. 7209	6½	+4.14	+10.8	−18 28.9	0 35.8	+11 27.0	−0.2644	.5296	+.1954	+21	−59
19 Capricorni	6	4.13	11.3	18 22.9	3 15.1	− 9 58.7	+0.1500	.5275	.1993	+43	−35
21 Capricorni	6	4.11	11.8	18 0.1	6 13.6	− 7 5.8	+0.3395	.5252	.2033	+53	−25
θ Capricorni	4	4.08	12.3	17 42.8	8 44.0	− 4 40.1	+0.5409	.5232	.2066	+66	−15
29 Capricorni	6	3.99	13.1	15 40.4	13 39.6	+ 0 6.4	−0.6365	.5196	.2127	+ 4	−87
B. A. C. 7487	6½	+3.90	+14.4	−14 1.2	23 6.8	+ 9 16.6	−0.3745	.5129	+.2230	+19	−65
42 Capricorni	5	3.89	15.1	14 35.2	**16** 2 52.4	−11 4.5	+1.0877	.5105	.2265	+76	+18
λ Capricorni	5½	3.81	15.0	11 55.4	5 30.1	− 8 31.4	−1.2162	.5088	.2288	−32	−90
B. A. C. 7697	6½	3.72	16.5	11 2.2	16 31.3	+ 2 10.8	+0.3839	.5022	.2374	+62	−23
e^1 Aquarii	6	3.72	16.8	11 24.9	18 14.6	+ 3 51.1	+1.2084	.5013	.2385	+79	+27
θ Aquarii	4½	+3.64	+16.8	− 8 23.1	21 40.7	+ 7 11.4	−1.2877	.4996	+.2406	−36	−90
B. A. C. 7774	6	3.66	17.1	9 38.6	21 41.9	+ 7 12.6	+0.0959	.4996	.2406	+46	−38
ρ Aquarii	5½	3.64	17.0	8 25.7	23 30.6	+ 8 58.3	−0.7995	.4986	.2417	0	−90
67 Aquarii	6	3.52	18.2	7 35.7	**17** 12 10.5	− 2 42.9	+1.3864	.4932	.2474	+83	+47
B. A. C. 7986	6	3.45	18.6	5 37.9	18 51.2	+ 3 45.9	+0.8849	.4909	.2476	+85	+ 3
B. A. C. 8152	6½	+3.25	+18.5	− 0 22.5	**18** 10 51.2	− 4 38.9	−0.9032	.4872	+.2515	− 4	−90
9 Piscium	6	3.22	18.4	+ 0 27.5	12 58.0	− 2 35.4	−1.2912	.4870	.2515	−33	−90
15 Piscium	6½	3.19	18.6	0 38.7	17 38.9	+ 1 57.9	−0.3203	.4865	.2514	+27	−61
16 Piscium	6	3.19	18.5	1 25.8	18 10.4	+ 2 28.6	−1.0583	.4864	.2514	−14	−89
λ Piscium	5	3.17	18.7	1 6.8	21 23.4	+ 5 36.5	+0.0999	.4863	.2511	+49	−38
19 Piscium	6	+3.13	+18.4	+ 2 48.9	23 51.3	+ 8 0.5	−1.1639	.4862	+.2507	−22	−87
B. A. C. 8276	6½	3.13	18.9	1 32.6	**19** 1 13.7	+ 9 20.7	+0.5871	.4862	.2504	+80	−13
22 Piscium	6	3.12	18.8	2 15.4	3 1.0	+11 5.1	+0.2451	.4862	.2501	+57	−31
25 Piscium	6	3.11	19.9	1 25.1	3 38.9	+11 42.0	+1.3317	.4863	.2500	+90	+38
45 Piscium	6	2.95	18.2	7 1.3	22 5.9	+ 5 39.5	−0.3067	.4883	.2440	+27	−59
51 Pisc., *mult.*.	6½	+2.92	+18.6	+ 6 17.3	**20** 1 51.5	+ 9 18.9	+1.4184	.4891	+.2422	+90	+60
75 Piscium	6	2.76	17.0	12 18.4	20 43.0	+ 3 39.6	−0.7768	.4956	.2302	+ 2	−73
η Piscium	3½	2.66	16.3	14 43.3	**21** 10 5.4	− 7 20.6	−0.4341	.5020	.2186	+20	−62
101 Piscium	6	2.64	16.5	14 2.5	12 22.0	− 5 7.9	+0.8096	.5033	.2163	+90	+ 4
105 Piscium	6	2.63	16.0	15 47.4	14 23.9	− 3 9.5	−0.6790	.5045	.2143	+ 8	−74
3 Arietis	6½	2.60	15.5	16 48.3	17 59.8	+ 0 20.1	−1.0306	.5066	.2104	−15	−73
4 Arietis	6	+2.60	+15.7	+16 21.2	18 50.0	+ 1 8.8	−0.3571	.5072	+.2094	+24	−56
ι Arietis	6	2.57	15.4	17 13.5	23 33.4	+ 5 43.9	−0.3392	.5102	.2040	+25	−54
B. A. C. 632	6	2.54	15.1	17 40.2	**22** 2 48.3	+ 8 52.9	−0.1716	.5124	.2001	+34	−44
15 Arietis	6	2.52	14.9	18 55.7	6 16.9	−11 44.7	−0.8618	.5148	.1956	− 4	−71
θ Arietis	5½	2.50	14.5	19 20.4	10 2.6	− 8 5.9	−0.5864	.5175	.1905	+12	−66
26 Arietis	6	+2.45	+14.3	+19 19.0	16 13.5	− 2 6.4	+0.5894	.5177	+.1815	+83	− 3

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

JULY.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	°	d h m	h m				°	°
ν Arietis	5½	+2.43	+13.3	+21 26.2	**22** 20 10.9	+ 1 43.6	−1.0165	.5251	+.1755	−15	−69
ε Arietis, *mult.*	4½	2.35	13.2	20 51.3	**23** 5 56.0	+11 9.9	+1.2488	.5329	.1592	+90	+46
64 Arietis	6	2.29	11.5	24 17.6	17 28.7	− 1 40.3	−0.7619	.5423	.1375	0	−66
7 Tauri, *mult.*	6	2.27	11.4	24 3.4	22 3.8	+ 2 45.3	+0.1033	.5460	.1280	+50	−21
11 Tauri	6	2.25	11.0	24 56.2	**24** 0 52.3	+ 5 28.1	−0.4927	.5483	.1221	+16	−53
g Pleiadum	5½	+2.23	+11.2	+23 54.4	2 41.0	+ 7 13.0	+0.8321	.5499	+.1182	+90	+19
b Pleiadum	4	2.22	11.2	23 43.9	2 43.1	+ 7 15.0	+1.0252	.5498	.1180	+90	+31
m Pleiadum	7	2.23	11.0	24 27.4	2 49.8	+ 7 21.5	+0.2583	.5499	.1178	+59	−15
e Pleiadum	5	2.22	11.1	24 5.2	2 51.5	+ 7 23.1	+0.6605	.5499	.1178	+90	+ 9
c Pleiadum	5	2.22	11.2	23 59.3	3 8.0	+ 7 39.1	+0.7976	.5502	.1171	+90	+17
d Pleiadum	5	+2.21	+11.4	+23 34.2	3 21.8	+ 7 52.4	+1.2741	.5503	+.1167	+90	+56
η Tauri	3	2.21	11.2	23 43.8	3 52.3	+ 8 21.8	+1.1614	.5507	.1156	+90	+43
h Pleiadum	5½	2.21	11.1	23 45.9	4 37.3	+ 9 5.2	+1.2086	.5514	.1137	+90	+47
B. A. C. 1192	6	2.22	10.7	25 12.7	5 5.3	+ 9 32.3	−0.2920	.5517	.1128	+27	−41
p Tauri	6	2.17	9.8	26 9.9	13 59.1	− 5 52.9	−0.3975	.5586	.0922	+22	−45
φ Tauri, *mult.*	5½	+2.15	+ 9.3	+27 3.6	18 1.9	− 1 58.9	−0.9988	.5617	+.0822	−17	−63
χ^1 Tauri	5½	2.12	9.8	25 20.5	19 0.8	− 1 2.2	+0.9122	.5624	.0800	+90	+27
χ^2 Tauri	8½	2.12	9.8	25 20.8	19 1.0	− 1 2.0	+0.9076	.5624	.0800	+90	+27
B. A. C. 1648	6½	1.99	9.0	27 50.0	**25** 19 5.0	− 1 52.2	−0.5673	.5770	.0152	+11	−49
β Tauri	2	1.98	6.6	28 30.2	21 12.2	+ 0 10.2	−1.2448	.5779	+.0092	−48	−62
B. A. C. 1746	6½	+1.94	+ 6.6	+27 35.0	**26** 1 5.9	+ 3 54.8	−0.2640	.5796	−.0020	+28	−29
136 Tauri	5	1.91	5.8	27 35.0	8 2.8	+10 35.5	−0.3469	.5820	.0224	+24	−35
ε Geminorum	3½	1.78	4.3	25 15.1	**27** 4 8.7	+ 5 53.8	+1.0191	.5844	.0815	+90	+35
37 Geminorum	6	1.75	3.6	25 31.6	8 38.7	+10 13.3	+0.3376	.5842	.0945	+64	− 5
39 Geminorum	6½	1.75	3.4	26 14.5	10 1.0	+11 32.3	−0.5271	.5840	.0985	+14	−53
40 Geminorum	6½	+1.76	+ 3.4	+26 4.7	10 16.6	+11 47.2	−0.3866	.5840	−.0991	+22	−44
B. A. C. 3538	6½	1.58	− 6.1	9 34.5	**30** 23 31.7	− 2 7.4	−0.6634	.5491	.2673	+ 9	−80
44 Leonis	6	1.58	6.1	9 24.1	**31** 0 52.9	− 0 49.0	−0.8531	.5486	.2683	− 2	−81
B. A. C. 3562	6½	1.58	6.1	9 23.4	1 2.3	− 0 40.0	−0.8894	.5485	.2685	− 4	−81
48 Leonis	6	+1.57	6.8	+ 7 34.7	5 12.5	+ 3 21.6	−0.2068	.5470	.2715	+33	−53
35 Sextant. *mult.*	6½	+1.58	− 7.7	+ 5 23.1	9 5.2	+ 7 6.4	+0.9190	.5458	−.2739	+90	+ 6
37 Sextantis	6	1.60	7.5	7 0.8	10 19.4	+ 8 18.0	−1.0406	.5454	.2747	−13	−83
d Leonis	5	1.62	8.5	4 16.2	16 55.8	− 9 19.0	−0.1352	.5436	.2776	+36	−50
p^3 Leonis	6	1.62	9.2	2 36.9	19 51.8	− 6 28.9	+0.6958	.5430	.2785	+90	− 7
B. A. C. 3836	6	+1.65	− 9.4	+ 2 55.9	23 2.7	− 3 24.5	−0.5061	.5423	−.2792	+17	−74

AUGUST.

Name.	Mag.	$\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
75 Leonis	5½	+1.66	+ 9.5	+ 2 40.7	**1** 0 36.0	− 1 54.3	−0.6882	.5421	−.2795	+ 8	−88
76 Leonis	6	1 66	9.7	2 19.0	1 21.3	− 1 10.5	−0.5395	.5419	.2796	+16	−76
79 Leonis	5½	1.67	9.9	+ 2 4.4	3 42.3	+ 1 5.8	−0.9559	.5416	.2798	− 8	−88
υ Leonis	4½	1.69	11.0	− 0 9.2	9 39.1	+ 6 50.6	−0.4008	.5409	.2796	+23	−66
B. A. C. 4201	6	+1.88	+14.8	− 8 0.3	**2** 9 6.2	+ 5 30.6	+0.9649	.5418	−.2702	+82	+ 8
q Virginis	6	1.91	15.2	8 47.0	11 45.8	+ 8 4.9	+1.0299	.5423	.2680	+81	+13
χ Virginis	5	1.94	14.8	7 19.7	14 15.8	+10 29.8	−1.0945	.5428	.2660	−19	−90
B. A. C. 4259	6	1.94	14.8	7 21.8	14 19.4	+10 33.3	−1.0745	.5428	.2659	−17	−90
B. A. C. 4312	6½	1.98	15.8	9 40.7	19 46.0	− 8 12.0	−0.1890	.5439	.2609	+31	−54
ψ Virginis	5	+2.00	+15.7	− 8 52.8	21 7 2	− 6 52.7	−1.3421	.5442	−.2596	−43	−90
75 Virginis	6	2.23	17.9	14 14.4	**3** 14 20.8	+ 9 45.3	+0.2532	.5498	.2384	+52	−30
83 Virginis	6	2.34	18.2	15 34.2	19 28.3	− 9 17.9	−0.1104	.5517	.2307	+31	−50
85 Virginis	6	2.33	18.1	15 9.5	19 57.4	− 8 49.8	−0.6375	.5519	.2300	+ 4	−87
87 Virginis	6	2.33	18.8	17 15.2	20 44.3	− 8 4.5	+1.3026	.5523	.2286	+73	+40
89 Virginis	5	+2.35	+18.8	−17 31.9	21 49.1	− 7 2.0	+1.3283	.5527	−.2270	+73	+45
B. A. C. 4722	6	2.49	18.7	17 38.1	**4** 8 54.4	+ 3 39.7	−0.9669	.5574	.2076	−18	−90
B. A. C. 4739	6½	2.56	18.9	18 9.3	10 17.3	+ 4 59.6	−0.7244	.5580	.2049	− 3	−90
B. A. C. 4923	6	2.87	18.8	20 52.1	**5** 2 39.0	− 3 14.5	−1.0435	.5654	.1707	−27	−90
B. A. C. 4984	6	+3.01	+19.3	−23 31.4	7 50.3	+ 1 45.2	+0.8213	.5677	−.1587	+67	+ 3

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5023	6	+3.04	-18.5	-21 57.2	5 10 34.2	+ 4 33.0	-1.2159	.5693	-.1523	-45	-90
42 Libræ	5½	2.25	17.9	23 25.5	20 22.1	-10 11.2	-1.0789	.5724	.1278	-34	-90
B. A. C. 5197	6	3.30	17.9	24 20.1	22 37.2	- 8 1.2	-0.4221	.5732	.1219	+ 4	-71
b Scorpii	5	3.37	18.0	25 23.0	6 0 41.4	- 6 1.7	+0.4133	.5738	.1165	+48	-20
A² Scorpii	5	3.37	17.7	24 58.0	1 46.1	- 4 59.5	-0.1421	.5742	.1136	+17	-52
B. A. C. 5253	6	+3.36	-17.5	-24 10.3	1 54.0	- 4 51.9	-0.9768	.5742	-.1133	-29	-90
B. A. C. 5255	6	3.37	17.7	25 3.1	2 0.6	- 4 45.5	-0.0812	.5742	.1130	+20	-48
3 Scorpii	6	3.39	17.6	24 53.2	2 14.6	- 4 35.0	-0.2721	.5743	.1125	+11	-60
4 Scorpii	6	3.41	17.9	25 54.7	2 31.1	- 4 16.2	+0.7504	.5744	.1116	+64	- 1
B. A. C. 5286	6½	3.41	17.2	24 28.9	3 47.8	- 3 2.4	-0.8674	.5748	.1082	-22	-90
π Scorpii	3	+3.48	-17.7	-25 46.0	3 52.7	- 2 57.7	+0.4513	.5748	-.1080	+49	-18
B. A. C. 5314	6	3.46	17.4	25 31.7	5 42.4	- 1 12.2	+0.0132	.5753	.1031	+24	-43
B. A. C. 5347	5	3.51	17.1	26 0.2	7 37.3	+ 0 38.2	+0.3121	.5758	.1021	+40	-26
σ Scorpii	3½	3.60	16.0	25 18.2	12 54.7	+ 5 43.5	-0 8954	.5770	.0824	-26	-90
α Scorpii	1½	3.68	15.8	26 9.8	16 12.1	+ 8 53.2	-0.2604	.5775	.0742	+ 8	-59
B. A. C. 5800	6½	+4.02	-12.3	-26 50.4	7 10 11.4	+ 2 10.7	-0.4329	.5781	-.0227	- 6	-72
A¹ Ophiuchi	5½	4.02	12.1	26 25.5	10 40.7	+ 2 38.9	-0.8788	.5780	.0214	-31	-90
A² Ophiuchi	6	4.02	12.1	26 25.4	10 40.8	+ 2 39.0	-0.8796	.5780	.0214	-31	-90
38 Ophiuchi	6½	4.04	11.9	26 29.7	11 34.6	+ 3 30.7	-0.8226	.5780	.0188	-28	-90
43 Ophiuchi	6	4.11	11.9	28 1.5	13 50.1	+ 5 40.9	+0.7458	.5777	.0123	+62	0
B. A. C. 5909	6½	+4.12	-10.6	-26 10.6	17 15.5	+ 8 58.5	-1.2198	.5772	-.0025	-58	-90
3 Sagittarii	5	4.25	9.7	27 47.1	23 37.5	- 8 54.2	+0.5112	.5758	+.0156	+45	-14
B. A. C. 6024	6½	4.24	9.0	27 1.3	8 0 46.9	- 7 47.5	-0.2546	.5755	.0188	+ 3	-59
B. A. C. 6063	6½	4.31	8.8	28 2.9	3 20.6	- 5 19.7	+0.8666	.5748	.0261	+62	+ 8
B. A. C. 6194	6	4.39	6.2	27 5.2	12 7.4	+ 3 7.2	+0.1896	.5715	.0504	+29	-33
λ Sagittarii	3	+4.38	- 4.7	-25 29.3	16 16.6	+ 7 7.0	-1.2712	.5697	+.0616	-61	-90
B. A. C 6369	6	4.45	2.9	25 8.2	23 20.2	-10 5.1	-1.1484	.5661	.0801	-45	-90
φ Sagittarii	3½	4.51	3.2	27 6.9	23 38.0	- 9 47.9	+0.9788	.5660	.0808	+63	+15
σ Sagittarii	2½	4.53	2.0	26 26.8	9 3 43.4	- 5 51.6	+0.6204	.5637	.0912	+58	- 8
B A. C. 6490	6½	4.50	1.0	25 1.0	6 50.0	- 2 52.7	-0.6084	.5618	.0988	- 8	-88
B. A. C. 6562	6½	+4.58	+ 0.2	-26 6.6	11 26.4	+ 1 34.7	+1.0406	.5589	+.1099	+64	+20
ψ Sagittarii	6	4.56	0.6	25 27.9	12 27.3	+ 2 33.5	+0.4638	.5583	.1123	+50	-18
B. A. C. 6576	6	4.52	0.9	24 23.2	12 28.9	+ 2 35.0	-0.6853	.5583	.1123	-11	-90
*χ*¹ Sagittarii	6	4.58	2.0	24 44.6	16 43.2	+ 6 40.3	+0.1931	.5554	.1221	+36	-33
*χ*² Sagittarii	6½	4.58	2.0	24 39.0	16 46.2	+ 6 43.2	+0.0998	.5554	.1222	+31	-38
*χ*³ Sagittarii	6	+4.57	+ 2.2	-24 11.9	16 50.0	+ 6 46.8	-0.3756	.5554	+.1224	+ 6	-67
B. A. C. 6699	6½	4.52	3.0	23 34.4	21 19.5	+11 6.8	-0.4741	.5523	.1323	+ 3	-75
*h*¹ Sagittarii	6	4.60	2.8	24 59.0	21 27.8	+11 14.8	+1.0561	.5522	.1327	+65	+21
*h*² Sagittarii	4½	4.61	3.0	25 9.0	21 45.4	+11 31.8	+1.2729	.5520	.1333	+65	+46
53 Sagittarii	6	4.56	3.6	23 42.0	23 11.1	-11 5.5	-0.0873	.5511	.1363	+23	-49
B. A. C. 6727	6½	+4.56	+ 3.7	-23 42.2	23 19.0	-10 57.9	-0.0667	.5510	+.1367	+24	-47
B. A. C. 6864	6	4.59	6.2	23 4.1	10 8 56.8	- 1 39.8	+0.6645	.5441	.1564	+66	- 7
B. A. C. 6878	6½	4.59	6.5	22 56.0	10 1.5	- 0 37.3	+0.6894	.5432	.1585	+67	- 5
B. A. C. 6889	6	4.54	6.9	21 39.3	10 36.9	- 0 3.1	-0.5939	.5428	.1596	- 1	-85
JUPITER				20 47.8	16 8.9	+ 5 17.9	-0.6086	.5441	.1710	0	-86
4 Capricorni	6	+4.56	+ 8.1	-22 11.0	16 39.7	+ 5 47.7	+0.9739	.5384	+.1706	+68	+13
υ Capricorni	5½	4.46	10.9	18 33.8	11 3 11.9	- 8 0.6	-1.0457	.5307	.1881	-24	-90
B A. C. 7202	6	4.46	11.8	18 38.6	7 14.9	- 4 5.3	-0.2034	.5278	.1943	+24	-55
B. A. C. 7209	6½	4.46	11.9	18 28.9	7 42.2	- 3 38.9	-0.2783	.5275	.1949	+20	-59
19 Capricorni	6	4.46	12.5	18 22.8	10 22.9	- 1 3.3	+0.1444	.5255	.1988	+42	-36
21 Capricorni	6	4.45	13.2	18 0.1	13 22.9	+ 1 51.1	+0.3355	.5235	.2029	+53	-25
θ Capricorni	4	+4 44	+13.6	-17 42.8	15 54.4	+ 4 18.0	+0.5386	.5217	+.2062	+65	-15
29 Capricorni	6	4.37	14 7	15 40.4	20 52.0	+ 9 6.4	-0.6424	.5184	.2124	+ 4	-87
B. A. C. 7487	6½	4 31	16.8	14 1.2	12 6 22.3	- 5 40.3	-0 3765	.5123	.2228	+19	-65
42 Capricorni	5	4 33	17.1	14 35 2	10 8.9	- 2 0.4	+1.0914	.5099	.2266	+76	+18
λ Capricorni	5½	4.24	17.6	11 55 4	12 47.3	+ 0 33.4	-1.2187	.5085	.2289	-32	-90
B. A. C 7697	6½	+4.21	+19.3	-11 2.1	23 50.3	+11 17.6	+0.3878	.5025	+.2377	+62	-23

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
e^1 Aquarii	6	+4.21	+19.5	-11 24.9	**13** 1 33.9	-11 1.9	+1.2151	.5017	+.2389	+79	+27
θ Aquarii	4½	4.14	19.8	8 23.1	5 0.2	- 7 41.4	-1.2862	.5000	.2410	-36	-90
B. A. C. 7774	6	4.16	20.0	9 38.5	5 1.5	- 7 40.1	+0.0997	.5000	.2411	+47	-38
ρ Aquarii	5½	4.14	20.1	8 25.7	6 50.4	- 5 54.2	-0.7963	.4992	.2421	0	-90
67 Aquarii	6	4.07	21.5	7 35.7	19 30.6	+ 6 24.9	+1.3954	.5942	.2479	+83	+51
B. A. C. 7986	6	+4.03	+22.1	- 5 37.9	**14** 2 11.1	-11 5.5	+0.8931	.4921	+.2501	+85	+ 4
B. A. C. 8152	6½	3.86	23.0	- 0 22.4	18 10.0	+ 4 27.6	-0.8976	.4886	.2523	- 4	-90
9 Piscium	6	3.86	22.9	+ 0 27.5	20 16.7	+ 6 30.7	-1.2862	.4883	.2523	-33	-90
15 Piscium	6½	3.84	23.2	0 38.7	**15** 0 57.3	+11 4.0	-0.3138	.4878	.2521	+27	-61
16 Piscium	6	3.83	23.0	1 25.9	1 28.7	+11 34.6	-1.0529	.4878	.2521	-14	-89
λ Piscium	5	+3.82	+23.3	+ 1 6.9	4 41.4	- 9 17.9	+0.1071	.4875	+.2518	+49	-38
19 Piscium	6	3.79	23.4	2 49.0	7 9.2	- 6 54.0	-1.1585	.4875	.2514	-21	-87
B. A. C. 8276	6½	3.80	23.6	1 32.7	8 31.5	- 5 33.9	+0.5948	.4875	.2511	+81	-13
22 Piscium	6	3.78	23.8	2 15.5	10 18.7	- 3 49.6	+0.2524	.4875	.2509	+57	-30
25 Piscium	6	3.78	23.8	1 25.2	10 56.6	- 3 12.7	+1.3412	.4875	.2506	+90	+39
45 Piscium	6	+3.66	+23.5	+ 7 1.4	**16** 5 23.2	- 9 15.6	-0.3021	.4891	+.2443	+28	-59
75 Piscium	6	3.54	22.1	12 18.5	**17** 4 3.3	-11 12.5	-0.7766	.4954	.2301	+ 2	-73
η Piscium	3½	3.48	21.4	14 43.3	17 30.0	+ 1 51.6	-0.4355	.5010	.2180	+21	-62
101 Piscium	6	3.46	21.6	14 2.6	19 47.6	+ 4 5.4	+0.8134	.5021	.2157	+90	- 5
105 Piscium	6	3.46	21.0	15 47.5	21 50.3	+ 6 4.5	-0 6825	.5031	.2136	+ 7	-75
3 Arietis	6½	+3.43	+21.5	+16 48.4	**18** 1 27.9	+ 9 35.9	-1.0371	.5051	+.2094	-15	-73
4 Arietis	6	3 43	20.7	16 21.2	2 18.6	+10 25.1	-0.3599	.5055	.2086	+25	-56
ι Arietis	6	3.42	20.3	17 13.6	7 4.5	- 8 57.3	-0.3425	.5082	.2031	+25	-54
B. A. C. 632	6	3.40	19.9	17 40.3	10 21.4	- 5 46.3	-0.1745	.5101	.1990	+34	-44
15 Arietis	6	3.38	19.2	18 55.7	13 52.2	- 2 21.7	-0.8698	.5122	.1945	- 5	-71
θ Arietis	5½	+3.37	+19.1	+19 20.5	17 40.5	+ 1 19.7	-0.5936	.5146	+.1893	+11	-67
26 Arietis	6	3.32	18.7	19 19.1	23 56.1	+ 7 23.8	+0.5897	.5188	.1803	+83	- 3
ν Arietis	5½	3.32	17.7	21 26.3	**19** 3 56.7	+11 17.0	-1.0290	.5214	.1743	-17	-69
ε Arietis	4½	3.25	17.4	20 51.4	13 50.8	- 3 7.6	+1.2526	.5285	.1577	+90	+47
64 Arietis	6	3.22	15.1	24 17.7	**20** 1 35.5	+ 8 14.2	-0.7766	.5326	.1474	0	-66
7 Tauri	6	+3.19	+14.8	+24 3.5	6 15.7	-11 14.9	+0.0955	.5405	+.1265	+49	-22
11 Tauri	6	3.17	14.2	24 56.2	9 7.5	- 8 28.9	-0.5056	.5426	.1207	+15	-54
g Pleiadum	5½	3.15	14.3	23 54.5	10 58.4	- 6 41.8	+0.8304	.5438	.1168	+90	+18
b Pleiadum	4	3.13	14.4	23 43.9	11 0.5	- 6 39.7	+1.0254	.5439	.1167	+90	+31
m Pleiadum	7	3.15	14.2	24 27.5	11 7.3	- 6 33.1	+0.2509	.5440	.1165	+59	-13
e Pleiadum	5	+3.16	+14.3	24 5.2	11 9.0	- 6 31.5	+0.6570	.5440	+.1164	+90	+ 9
c Pleiadum	5	3.16	14.2	23 59.3	11 25.9	- 6 15.2	+0.7958	.5442	.1158	+90	+17
d Pleiadum	5	3.12	14.3	23 34.2	11 40.0	- 6 1.5	+1.2761	.5443	.1153	+90	+56
η Tauri	3	3.13	14.3	23 43.8	12 11.1	- 5 31.6	+1.1625	.5447	.1142	+90	+43
f Pleiadum	4	3.12	14.2	23 41.0	12 56.4	- 4 47.8	+1.2990	.5453	.1126	+90	+64
h Pleiadum	5½	+3.13	+14.2	+23 46.0	12 57.0	- 4 47.2	+1.2098	.5453	+.1125	+90	+48
B. A. C. 1192	6	3.15	13.6	25 12.7	13 25.6	- 4 19.5	-0.3039	.5456	.1115	+26	-41
p Tauri	6	3.10	12.2	26 9.9	22 30.5	+ 4 26.3	-0.4116	.5521	.0910	+20	-45
φ Tauri	5½	3.08	11.3	27 3.6	**21** 2 38.5	+ 8 25.6	-1.0186	.5549	.0814	-19	+63
χ^1 Tauri	5½	3.05	11.8	25 20.6	3 38.7	+ 9 23.6	+0.9089	.5556	.0790	+90	+27
χ^2 Tauri	8½	+3.05	+11.8	+25 20.8	3 38.9	+ 9 23.8	+0.9036	.5556	+.0789	+90	+27
B. A. C. 1648	6½	2.87	7.9	27 50.0	**22** 4 14.8	+ 9 5.5	-0.5855	.5697	+.0148	+10	-51
B. A. C. 1746	6½	2.80	7.1	27 35.0	10 23.6	- 8 59.5	-0.2795	.5698	-.0020	+27	-30
136 Tauri	5	2.74	6.1	27 35.0	17 29.3	- 2 10.1	-0.3635	.5748	.0221	+23	-37
ε Geminorum	3½	2.50	3.7	25 15.1	**23** 13 58.3	- 6 28.5	+1.0127	.5784	.0805	+90	+34
37 Geminorum	6	2.46	3.0	25 31.6	18 32.8	- 2 4.5	+0.3270	.5785	.0924	+64	- 6
39 Geminorum	6½	+2.47	+ 2.6	+26 14.4	19 56.3	- 0 44.3	-0.5426	.5785	-.0975	+13	-54
40 Geminorum	6½	2.46	2.5	26 4.7	20 12.2	- 0 29.1	-0.4017	.5785	.0982	+21	-44
ω Geminorum	6	2.42	2.8	24 23.3	21 25.7	+ 0 41.6	+1.2198	.5785	.1018	+90	+51
48 Geminorum	6	2.37	2.2	24 19.9	**24** 21 28.2	+ 0 34.7	+0.8545	.5782	.1126	+90	+20
52 Geminorum	6	2.38	1.8	25 5.7	2 21.7	+ 5 26.1	-0.0431	.5781	.1151	+41	-27
A Geminorum	5½	+2.35	+ 1.4	+25 17.0	5 54.6	+ 8 50.8	-0.6624	.5774	-.1246	+ 6	-63

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

AUGUST.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	°	d h m	h m				°	°
B. A. C. 2514	6½	+2.29	+ 0.7	+24 29.8	**24** 12 17.4	- 9 1.1	-0.7040	.5765	-.1416	+ 4	-66
κ Geminor.	3½	2.28	0.2	24 41.3	14 25.2	- 6 58.2	-1.2070	.5761	.1471	-35	-66
84 Geminorum	6½	2.20	+ 0.2	22 38.9	17 57.2	- 3 34.3	+0.3357	.5752	.1563	+64	-12
7 Cancri	6½	2.17	- 0.3	22 24.7	22 23.1	+ 0 41.5	-0.1407	.5741	.1672	+36	-37
μ¹ Cancri	6	2.17	0.7	22 58.9	23 22.9	+ 1 39.0	-0.8863	.5738	.1696	- 7	-67
μ² Cancri	5½	+2.14	- 0.6	+21 56.1	**25** 0 0.0	+ 2 14.7	+0.0707	.5737	-.1710	+47	-26
B. A. C. 2788	6	2.10	1.1	21 7.9	5 11.9	+ 7 14.8	-0.0387	.5720	.1833	+41	-33
B. A. C. 2854	6	2.03	1.6	19 23.8	9 55.7	+11 48.0	+0.8190	.5704	.1940	+90	+11
η Cancri	6	2.06	1.8	20 51.2	10 19.7	-11 49.0	-0.7264	.5703	.1948	+ 4	-69
35 Cancri	6½	2.04	1.8	20 0.4	11 25.8	-10 45.4	-0.0889	.5699	.1972	+38	-37
39 Cancri	6	+2.04	- 2.2	+20 26.2	13 25.0	- 8 50 6	-0.9173	.5692	-.2013	- 8	-70
40 Cancri	6	2.04	2.3	20 24.0	13 27.2	- 8 48.4	-0.8882	.5692	.2015	- 6	-70
ε Cancri	6	2.02	2.1	19 58.4	13 34 1	- 8 41.8	-0.4815	.5692	.2017	+18	-60
42 Cancri	6½	2.01	2.1	20 28.9	13 40.8	- 8 35.4	-0.6801	.5691	.2019	+ 7	-69
B. A. C. 2925	6½	2.02	2.1	20 0.6	13 46.3	- 8 30.1	-0 5592	.5691	.2021	+13	-67
δ Cancri	4	+1.98	- 2.1	+18 36.1	15 21.5	- 6 58.4	+0.5327	.5685	-.2055	+78	-12
Venus				+18 50.8	16 1.9	- 6 19.5	+0.1473	.5196	.1958	+52	-27
B. A. C. 4201	6	1.71	13.0	- 8 0.2	**29** 17 27.7	- 8 20.3	+0.9888	.5514	.2743	+82	+10
q Virginis	6	1.72	13.4	8 47.0	20 2.0	- 5 51.1	+1.0537	.5519	.2741	+81	+14
χ Virginis	5	1.76	13.3	7 19.7	22 27.1	- 3 31.1	-1.0380	.5524	.2702	-15	-90
B. A. C. 4259	6	+1.76	-13.3	- 7 21.8	22 30.6	- 3 27.7	-1.0184	.5525	-.2701	-14	-90
B. A. C. 4312	6½	1.78	14.1	9 40.7	**30** 3 46.5	+ 1 37.1	-0.1435	.5538	.2651	+33	-51
ψ Virginis	5	1.79	13.9	8 52.8	5 5.0	+ 2 52.8	-1.2779	.5541	.2638	-36	-90
75 Virginis	6	1.96	15.9	14 44.4	21 45.3	- 5 2.5	+0.2999	.5593	.2423	+54	-28
83 Virginis	6	2.02	16.2	15 34.2	**31** 2 43.2	- 0 15 4	-0.0567	.5611	.2341	+34	-47
85 Virginis	6	+2.02	-16.1	-15 9.5	3 11.4	+ 0 11.8	-0.5765	.5613	-.2334	+ 8	-82
87 Virginis	6	2.03	16.6	17 15.2	3 56.8	+ 0 55.6	+1.3354	.5615	.2321	+73	+46
89 Virginis	5	2.05	16.7	17 31.8	4 59.7	+ 1 56.2	+1.3703	.5619	.2305	+73	+56
B. A. C. 4722	6	2.21	16.8	17 38.1	15 45.2	-11 42.0	-0.8972	.5660	.2103	-14	-90
B. A. C. 4739	6	+2.23	-17.0	-18 9.2	17 5.7	-10 24.4	-0.6580	.5666	-.2078	0	-90
SEPTEMBER.											
B. A. C. 4923	6	+2.50	-17.2	-20 52 1	**1** 9 1.6	+ 4 55.6	-0.9698	.5726	-.1727	-22	-90
B. A. C. 4984	6	2 61	17.8	23 31.4	14 5.6	+ 9 48.1	+0.8738	.5742	.1606	+67	+ 6
B. A. C. 5023	6	2.66	17.1	21 57.1	16 45.9	-11 37.8	-1.1297	.5751	.1539	-37	-90
42 Libræ	5½	2.84	16.7	23 25.5	**2** 2 21.9	- 2 24.0	-1.0051	.5777	.1289	-30	-90
B. A. C. 5197	6	+2.90	-16.9	-24 20.1	4 34.6	- 0 16.4	-0.3540	.5782	-.1230	+ 7	-65
b Scorpii	5	2.94	16.9	25 23.0	6 36.6	+ 1 40.8	+0.4731	.5787	.1172	+51	-17
A² Scorpii	5	2.95	16.7	24 57.9	7 40.3	+ 2 42.1	-0.0771	.5789	.1145	+21	-48
B. A. C. 5253	6	2.95	16.2	24 10.3	7 48.1	+ 2 49.5	-0.9047	.5789	.1141	-24	-90
B. A. C. 5255	6	2 96	16.5	25 3.1	7 54.5	+ 2 55.7	-0.0168	5789	.1139	+24	-44
3 Scorpii	6	+2.97	-16.4	-24 53.2	8 5.5	+ 3 6.3	-0.2056	.5789	-.1134	+14	-56
4 Scorpii	6	2.99	16.8	25 54.7	8 24.6	+ 3 24.6	+0.8074	.5790	.1126	+64	+ 3
B. A. C. 5286	6½	2.99	16.3	24 28.9	9 40.0	+ 4 37.1	-0.7960	.5790	.1090	-18	-90
π Scorpii	6	3.02	16.8	25 45.9	9 44.9	+ 4 41.8	+0.5105	.5791	.1087	+52	-15
B. A. C. 5314	6	3.04	16.4	25 31.7	11 32.8	+ 6 25.5	+0.0764	.5795	.1037	+28	-39
B. A. C. 5347	5	+3.09	-16.2	-26 0.2	13 26.0	+ 8 14.4	+0.3730	.5798	-.0984	+43	-22
σ Scorpii	3½	3.17	15.3	25 18.2	18 39.1	-10 45.0	-0.8243	.5803	.0838	-22	-90
α Scorpii	1½	3.26	15.3	26 9.8	21 54.1	- 7 37.7	-0.1949	.5805	.0746	+11	-55
B. A. C. 5800	6½	3.61	12.4	26 50.4	**3** 15 44.1	+ 9 30.7	-0.3680	.5790	.0229	- 3	-67
A¹ Ophiuchi	5½	3.61	12.2	26 25.5	16 13.2	+ 9 58.7	-0.8119	.5789	.0214	-27	-90
A² Ophiuchi	6	+3.61	-12.2	-26 25.4	16 13.3	+ 9 58.8	-0.8130	.5789	.0214	-27	-90
38 Ophiuchi	6½	3.64	11.9	26 29.7	17 6.8	+10 50.3	-0.7563	.5788	.0188	-24	-90
43 Ophiuchi	6	3.71	12.1	28 1.5	19 21.7	-11 0.0	+0.8059	.5783	.0125	+62	+ 4
B. A. C. 5909	6½	3.72	10.8	26 10.6	22 46.3	- 7 43.4	-1.1527	.5774	-.0027	-52	-90
3 Sagittarii	5	+3 88	- 9.9	-27 47.1	**4** 5 7.4	- 1 36.9	+0.5723	.5773	+.0155	+50	-11

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 6024	6½	+3.87	− 9.5	−27 1.3	4 6 16.7	− 0 30.3	−0.2096	.5749	+.0186	+ 5	−56
B. A. C. 6063	6½	3.96	9.0	28 · 2.9	8 50.3	+ 1 57.4	+0.9262	.5739	.0259	+62	+12
B. A. C. 6194	6	4.06	6.7	27 5.2	17 37.7	+10 24.8	+0.2492	.5698	.0501	+32	−29
λ Sagittarii	3	4.09	5.2	25 29.3	21 47.3	− 9 34.9	−1.2109	.5677	.0610	−53	−90
B. A. C. 6369	6	4.17	3.4	25 8.2	5 4 52.8	− 2 45.2	−1.0907	.5637	.0793	−40	−90
φ Sagittarii	3½	+4.21	− 4.0	−27 6.9	5 10.7	− 2 27.9	+1.0361	.5635	+.0801	+63	+20
σ Sagittarii	2½	4.27	2.8	26 26.8	9 17.3	+ 1 29.7	+0.6769	.5611	.0902	+62	− 5
B. A. C. 6490	6½	4.26	1.6	25 1.0	12 25.0	+ 4 30.6	−0.5533	.5591	.0980	− 5	−82
B. A. C. 6562	6½	4.35	0.9	26 6.7	17 3.2	+ 8 58.8	+1.0957	.5559	.1089	+64	+25
ψ Sagittarii	6	4.33	0.5	25 27.9	18 4.6	+ 9 58.1	+0.5182	.5552	.1113	+54	−14
B. A. C. 6576	6	+4.30	− 0.1	−24 23.2	18 6.1	+ 9 59.5	−0.6325	.5552	+.1114	+ 8	−90
χ^1 Sagittarii	6	4.36	+ 0.9	24 44.6	22 22.4	− 9 53.1	+0.2458	.5523	.1209	+38	−30
χ^2 Sagittarii	6½	4.36	0.9	24 39.0	22 25.3	− 9 50.3	+0.1520	.5523	.1210	+34	−35
χ^3 Sagittarii	6	4.35	1.0	24 11.9	22 29.2	− 9 46.6	−0.3234	.5523	.1211	+ 9	−63
B. A. C. 6699	6½	4.35	2.2	23 34.4	6 3 0.8	− 5 24.5	−0.4245	.5491	.1308	+ 5	−71
h^1 Sagittarii	6	+4.40	+ 1.9	−24 59.0	3 9.0	− 5 16.5	+1.1082	.5490	+.1313	+65	+25
53 Sagittarii	6	4.38	2.7	23 42.1	4 53.4	− 3 35.8	−0.0376	.5477	.1349	+25	−46
B. A. C. 6727	6½	4 38	2.7	23 42.2	5 1.2	− 3 28.2	−0.0170	.5476	.1352	+26	−44
B. A. C. 6864	6	4.45	5.3	23 4.1	14 44.3	+ 5 55.2	+0.7117	.5407	.1547	+67	− 4
B. A. C. 6878	6½	4.45	5.6	22 56.1	15 49.6	+ 6 58.2	+0.7359	.5398	.1567	+67	− 1
B. A. C. 6889	6	+4.41	+ 6.0	−21 39.3	16 25.3	+ 7 32.7	−0.5509	.5393	+.1579	+ 2	−80
JUPITER				21 18.4	17 22.4	+ 8 28.0	−0.7764	.5414	.1602	−11	−90
4 Capricorni	6	4.47	7.4	22 11.0	22 31.6	−10 33.0	+1.0184	.5350	.1689	+68	+16
υ Capricorni	5½	4.41	10.5	18 33.8	7 9 10.0	− 0 15.2	−1.0132	.5273	.1867	−22	−90
B. A. C. 7202	6	4.44	11.3	18 38.6	13 15.3	+ 3 42.4	−0.1535	.5245	.1924	+26	−52
B. A. C. 7209	6½	+4.44	+11.5	−18 28.9	13 42.8	+ 4 9.1	−0.2411	.5243	+.1931	+22	−57
19 Capricorni	6	4.44	12.1	18 22.8	16 25.1	+ 6 46.3	+0.1760	.5224	.1969	+44	−34
21 Capricorni	6	4.45	12.8	18 0.1	19 26.7	+ 9 42.1	+0.3657	.5204	.2010	+55	−24
θ Capricorni	6	4.44	13.3	17 42.8	21 59.6	−11 49.4	+0.5677	.5187	.2043	+67	−13
29 Capricorni	6	4.41	14.8	15 40.4	8 2 59.9	− 6 58.2	−0.6204	.5156	.2104	+ 5	−85
B. A. C. 7487	6½	+4.40	+16.8	−14 1.1	12 35.1	+ 2 20.0	−0.3614	.5099	+.2210	+20	−64
42 Capricorni	5	4.42	17.3	14 35.2	16 23.5	+ 6 1.7	+1.1082	.5077	.2247	+76	+20
λ Capricorni	5½	4.36	18.1	11 55.4	19 3.0	+ 8 36.6	−1.2114	.5063	.2272	−31	−90
B. A. C. 7697	6½	4.36	20.1	11 2.1	9 6 10.6	− 4 34.8	+0.3902	.5010	.2360	+62	−23
e^1 Aquarii	6	4.38	20.2	11 24.9	7 54.7	− 2 53.7	+1.2181	.5002	.2372	+79	+28
θ Aquarii	4½	+4.32	+21.1	− 8 23.1	11 22.3	+ 0 28.1	−1.2933	.4989	+.2394	−37	−90
B. A. C. 7774	6	4.35	20.9	9 38.5	11 23.6	+ 0 29.4	+0.0964	.4989	.2394	+46	−38
ρ Aquarii	5½	4.33	21.4	8 25.6	13 13.0	+ 2 15.8	−0.8044	.4980	.2405	− 1	−90
67 Aquarii	5½	4.29	23.1	7 35.6	10 1 56.6	− 9 21.6	+1.3804	.4936	.2467	+83	+46
B. A. C. 7986	6	4.28	23.9	5 37.8	8 38.2	− 2 50.9	+0.8706	.4919	.2489	+85	+ 3
B. A. C. 8152	6½	+4.20	25.7	− 0 22.3	11 0 38.9	−11 15.9	−0.9406	.4892	+.2515	− 7	−90
9 Piscium	6	4.19	25.9	+ 0 27.6	2 45.6	− 9 12.7	−1.3320	.4890	.2516	−39	−90
15 Piscium	6½	4.20	26.2	0 38.8	7 26.3	− 4 39.4	−0.3627	.4888	.2515	+25	−64
16 Piscium	6	4.20	26.2	1 26.0	7 57.7	− 4 8.8	−1.1038	.4888	.2514	−18	−89
λ Piscium	5	4.18	26.4	1 7.0	11 10.4	− 1 1.3	+0.0546	.4887	.2512	+46	−40
19 Piscium	6	+4.18	+26.5	+ 2 49.0	13 38.1	+ 1 22.5	−1.2156	.4887	+.2509	−26	−87
B. A. C. 8276	6½	4.19	26.6	1 32.8	15 0.4	+ 2 42.6	+0.5395	.4887	.2507	+77	−15
22 Piscium	6	4.18	26.7	2 15.6	16 47.6	+ 4 26.9	+0.1946	.4887	.2504	+54	−33
25 Piscium	6½	4.18	26.8	1 25.2	17 25.3	+ 5 3.6	+1.2838	.4888	.2502	+90	+33
45 Piscium	6	4.15	27.1	7 1.4	12 11 50.9	− 1 0.4	−0.3802	.4908	.2441	+24	−64
51 Piscium	6	4.13	27.3	6 17.4	15 36.4	+ 2 39.0	+1.3502	.4914	.2423	+90	+43
75 Piscium	6	+4.11	+26.5	+12 18.6	13 10 29.4	− 2 58.8	−0.8770	.4969	+.2298	− 4	−78
η Piscium	3½	4.09	25.9	14 43.4	23 56.3	+10 5.3	−0.5466	.5023	.2176	+15	−69
101 Piscium	6	4.09	25.9	14 2.7	14 2 14.0	−11 40.8	+0.7040	.5033	.2153	+90	− 1
105 Piscium	6	4.09	25.5	15 47.6	4 17.0	− 9 41.4	−0.7980	.5042	.2132	0	−74
3 Arietis	6½	4.09	25.1	16 48.5	7 54.9	− 6 9.7	−1.1561	.5060	.2092	−25	−73
4 Arietis	6	+4.09	+25.1	+16 21.3	8 45.7	− 5 20.3	−0.4776	.5065	+.2081	+19	−63

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	°	d h m	h m				°	°
ι Arietis	6	+4.09	+24.7	+17 13.7	**14** 13 32.4	− 0 42.0	−0.4641	.5088	+.2028	+19	−62
B. A. C. 632	6	4.08	24.3	17 40.4	16 49.9	+ 2 29.7	−0.2976	.5107	.1984	+27	−51
15 Arietis	6	4.09	23.7	18 55.8	20 21.5	+ 5 55.0	−0.9975	.5126	.1938	−13	−71
θ Arietis	5½	4.08	23.3	19 20.6	**15** 0 10.8	+ 9 37.6	−0 7233	.5148	.1886	+ 4	−71
26 Arietis	6	4.06	22.7	19 19.2	6 28.6	− 8 16.1	+0.4616	.5185	.1794	+72	−10
ν Arietis	5½	+4.08	+22.0	+21 26.3	10 30.9	− 4 21.2	−1.1676	.5210	+.1731	−28	−69
μ Arietis	5½	4.05	22.4	19 29.8	12 17.9	− 2 37.5	+1.2832	.5220	.1703	+90	+49
ε Arietis	4½	4.08	21.2	20 51.4	20 30.0	+ 5 19.2	+1.1223	.5270	.1567	+90	+34
64 Arietis	6	4.06	18.8	24 17.7	**16** 8 22.8	− 7 11.0	−0.9247	.5345	.1350	−10	−66
7 Tauri	6	4.05	18.1	24 3.5	13 6.9	− 2 36.2	−0.0467	.5375	.1254	+41	−29
11 Tauri	6	+4.04	+17.3	+24 56.3	16 1.3	+ 0 12.4	−0.6542	.5394	+.1193	+ 7	−63
g Pleiadum	5½	4.00	17.4	23 54.5	17 53.8	+ 2 1.2	+0.6925	.5405	.1157	+90	+11
b Pleiadum	4	3.99	17.4	23 44.0	17 56.0	+ 2 3.3	+0.8886	.5405	.1157	+90	+22
m Pleiadum	7	4.02	17.3	24 27.5	18 2.9	+ 2 9.9	+0.1081	.5406	.1152	+49	−20
e Pleiadum	5	4.01	17.3	24 5.3	18 4.7	+ 2 11 7	+0.5177	.5406	.1152	+78	+ 1
c Pleiadum	5	+4.02	+17.3	+23 59.4	18 21.9	+ 2 28.4	+0.6575	.5408	+.1142	+90	+ 9
d Pleiadum	5	3.99	17.4	23 34.3	18 36.2	+ 2 42.1	+1.1418	.5409	.1141	+90	+41
η Tauri	3	4.00	17.3	23 43 9	19 7.7	+ 3 12.5	+1.0273	.5413	.1131	+90	+32
f Pleiadum	4	3.99	17.2	23 41.0	19 53.8	+ 3 57.1	+1.1652	.5417	.1125	+90	+43
h Pleiadum	5½	4.00	17.2	23 46.0	19 54.4	+ 3 57.7	+1.0750	.5417	.1114	+90	+36
B. A. C. 1192	6	+4.02	+16.6	+25 12.8	20 23.5	+ 4 25.8	−0.4521	.5420	+.1104	+18	−50
p Tauri	6	3.99	14.8	26 9.9	**17** 5 38.1	−10 38.5	−0.5625	.5476	.0899	+12	−55
φ Tauri	5½	3.98	13.9	27 3.7	9 50.9	− 6 34.4	−1.1765	.5500	.0802	−35	−63
χ^1 Tauri	5½	3.93	14.3	25 20.6	10 52.3	− 5 35.2	+0.7704	.5505	.0778	+90	+19
χ^2 Tauri	8½	3.93	14.3	25 20.9	10 52.6	− 5 34.9	+0.7658	.5505	.0778	+90	+19
B. A. C. 1648	6½	+3.80	+ 8.9	+27 50.0	**18** 12 3.3	− 5 18.2	−0.7405	.5623	+.0147	0	−62
B. A. C. 1746	6½	3.71	7.8	27 35.0	18 22.1	+ 0 46.8	−0.4302	.5644	−.0020	+19	−39
136 Tauri	5	3.66	6.3	27 35.0	**19** 1 39.9	+ 7 48.3	−0.5138	.5664	.0217	+14	−46
139 Tauri	5½	3.58	6.5	25 56.3	3 39.3	+ 9 43.2	+1.1863	.5669	.0271	+90	+53
ε Geminorum	3½	3.35	2.9	25 15.0	22 45.8	+ 4 6.9	+0.8869	.5692	.0790	+90	+26
37 Geminorum	6	+3.31	+ 1.9	+25 31.6	**20** 3 28.8	+ 8 39.3	+0.1949	.5692	−.0915	+55	−13
39 Geminorum	6½	3.32	1.4	26 14.4	4 54.9	+10 2.3	−0.6864	.5692	.0954	+ 4	−63
40 Geminorum	6½	3.31	1.4	26 4.7	5 11.3	+10 18.0	−0.5436	.5692	.0961	+13	−54
ω Geminorum	6	3.25	1.7	24 23.2	6 27.0	+11 30.9	+1.0998	.5691	.0994	+90	+39
48 Geminorum	6	3.19	0.9	24 19.9	10 37.0	− 8 28.5	+0 7199	.5688	.1104	+90	+13
52 Geminorum	6	+3.20	+ 0.3	+25 5.6	11 32.1	− 7 35.5	−0.1773	.5687	−.1127	+33	−34
A Geminorum	5½	3.16	− 0.4	25 17.0	15 11.5	− 4 4.3	−0.8030	.5684	.1222	− 3	−65
B. A. C. 2514	6½	3.06	1.3	24 29.7	21 45.8	+ 2 15.3	−0.8402	.5675	.1388	− 5	−66
84 Geminorum	6½	2.95	1.8	22 38.9	**21** 3 35.6	+ 7 52.1	+0.2169	.5664	.1530	+56	−17
7 Cancri	6½	2.88	2.6	22 24.7	8 9.3	−11 44.3	−0.2618	.5655	.1638	+29	−44
μ^1 Cancri	6	+2.88	− 2.9	+22 58.9	9 10.5	−10 45.3	−1.0153	.5653	−.1662	−16	−67
μ^2 Cancri	5½	2.84	2.7	21 56.0	9 48.7	−10 8.5	−0.0467	.5652	.1677	+41	−33
B. A. C. 2788	6	2.77	3.4	21 7.9	15 9.1	− 5 0.0	−0.1524	.5640	.1797	+35	−39
B. A. C. 2854	6	2.68	3.7	19 23.8	20 0.1	− 0 19.5	+0.7186	.5627	.1903	+90	+ 5
η Cancri	6	2.71	4.1	20 51.2	20 24.8	+ 0 4.3	−0.8431	.5626	.1911	− 4	−69
35 Cancri	6½	+2.67	− 4.1	+20 0.4	21 32.7	+ 1 9.6	−0.1981	.5623	−.1935	+32	−43
39 Cancri	6	2.68	4.6	20 26.1	23 34.8	+ 3 7.4	−1.0320	.5618	.1975	−16	−70
40 Cancri	6	2.68	4.6	20 24.0	23 36.9	+ 3 9.4	−1.0025	.5618	.1978	−14	−70
ε Cancri	6	2.65	4.5	19 58.4	23 44.0	+ 3 16.2	−0.5928	.5618	.1980	+11	−66
42 Cancri	6½	2.64	4.5	20 8.9	23 50.9	+ 3 22.8	−0.7932	.5618	.1983	0	−70
B. A. C. 2925	6½	2.65	4.5	20 0.6	23 56.5	+ 3 28.2	−0.6713	.5618	.1984	+ 7	−70
δ Cancri	4	+2.60	− 4.3	+18 36.0	**22** 1 34.1	+ 5 2.3	+0.4346	.5613	−.2017	+70	−12
π^1 Cancri	6½	2.42	5.4	15 29.1	13 32.7	− 7 25.0	+1.0224	.5582	.2244	+90	+20
π^2 Cancri	6	2.40	5.6	15 26.7	14 47.4	− 6 12.9	+0.7811	.5579	.2266	+90	+ 5
7 Leonis	6½	2.32	6.8	14 55.2	23 47.8	+ 2 28.1	−0.8000	.5557	.2413	0	−75
ψ Leonis	6	2.27	7.2	14 34.6	**23** 3 16.3	+ 5 49.4	−1.2930	.5550	.2463	−37	−76
18 Leonis	6	+2.22	− 6.9	+12 22.2	4 26.0	+ 6 56.5	+0.6159	.5548	−.2479	+84	− 7

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

SEPTEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
B. A. C. 3345	6	+2.19	− 7.6	+11 59.5	23 4 56.9	+ 7 26.4	+0.8650	.5547	−.2487	+90	+ 7
ν Leonis	5	2.19	7.6	13 1.4	9 37.9	+11 57.4	−1.3421	.5538	.2548	−43	−77
A Leonis	5	2.12	7.7	10 35.6	13 56.1	− 7 53.5	−0.0320	.5531	.2600	+42	−42
B. A. C. 3538	6½	2.07	8.2	9 34.5	20 17.2	− 1 45.8	−0.6942	.5522	.2666	+ 7	−81
44 Leonis	6	2.06	8.4	9 24.1	21 37.5	− 0 28.2	−0.8794	.5520	.2679	− 3	−81
B. A. C. 3562	6½	+2.06	− 8.4	+ 9 23.4	21 46.7	− 0 19.3	−0.9091	.5520	−.2680	− 5	−81
48 Leonis	6	2.01	8.6	+ 7 34.7	24 1 53.3	+ 3 38.7	−0.2277	.5517	.2716	+31	−54
B. A. C. 4722	6	1.98	15.2	−17 38.1	28 0 57.0	− 0 42.2	−0.7570	.5766	.2129	− 5	−90
B. A. C. 4739	6	1.98	15.3	18 9.2	2 14.9	+ 0 32.7	−0.5199	.5772	.2101	+ 8	−77
B. A. C. 4923	6	2.19	15.4	20 52.1	17 38.8	− 8 39.4	−0.8076	.4836	.1748	−12	−90
B. A. C. 4984	6	+2.27	−15.9	−23 31.4	22 32.6	− 3 57.1	+1.0113	.5853	−.1621	+67	+16
B. A. C. 5023	6	2.30	15.4	21 57.1	29 1 7.5	− 1 28.3	−0.9660	.5868	.1556	−24	−90
42 Libræ	5½	2.45	15.1	23 25.4	10 24.4	+ 7 26.4	−0.8264	.5886	1304	−18	−90
B. A. C. 5197	6	2.50	15.1	24 20.1	12 32.8	+ 9 29.6	−0.1846	.5889	.1243	+16	−54
b Scorpii	5	2.55	15.2	25 23.9	14 30.8	+11 22.8	+0.6311	.5893	.1188	+61	− 7
A² Scorpii	5	+2.55	−15.1	−24 57.9	15 32.4	−11 38.0	+0.0904	.5894	−.1159	+29	−38
B. A. C. 5253	6	2.55	14.8	24 10.3	15 40.0	−11 30.8	−0.7239	.5894	.1155	−13	−90
B. A. C. 5255	6	2.56	15.1	25 3.0	15 46.1	−11 24.9	+0.1500	.5894	.1152	+32	−35
3 Scorpii	6	2.57	15.0	24 53.2	15 56.8	−11 14.6	−0.0358	.5895	.1146	+22	−45
4 Scorpii	6	2.58	15.2	25 54.6	16 15.2	−10 57.0	+0.9607	.5896	.1137	+64	+14
B. A. C. 5286	6½	+2.58	−14.7	−24 28.9	17 28.3	− 9 46.8	−0.6160	.5897	−.1106	− 8	−88
π Scorpii	3	2.60	15.0	25 45.9	17 33.0	− 9 42.3	+0.6700	.5897	.1103	+62	− 5
B. A. C. 5314	6	2.62	14.8	25 31.7	19 17.5	− 8 2.0	+0.2440	.5899	.1049	+37	−29
B. A. C. 5347	5	2.66	14.8	26 0.2	21 6.9	− 6 17.0	+0.5372	.5900	.0997	+53	−13
σ Scorpii	3½	2.74	14.1	25 18.1	30 2 10.5	− 1 25.7	−0.6381	.5901	.0846	−12	−90
α Scorpii	1½	+2.81	−14.0	−26 9.8	5 19.6	+ 1 35.7	−0.0167	.5901	−.0752	+20	−44
B. A. C. 5800	6½	3.13	11.7	26 50.4	22 39.9	− 5 45.9	−0.1788	.5869	.0230	+ 7	−54
A¹ Ophiuchi	5½	3.14	11.5	26 25.5	23 8.3	− 5 18.6	−0.6163	.5869	.0216	−16	−89
A² Ophiuchi	6	+3.14	−11.5	−26 25.4	23 8.4	− 5 18.5	−0.6172	.5869	−.0215	−16	−90

OCTOBER.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
38 Ophiuchi	6½	+3.16	−11.3	−26 29.7	1 0 0.5	− 4 28.5	−0.5614	.5866	−.0190	−13	−83
43 Ophiuchi	6	3.22	11.5	28 1.5	2 12.1	− 2 22 1	+0.9806	.5858	.0124	+62	+17
B. A. C. 5909	6½	3.24	10.3	26 10.6	5 31.8	+ 0 49.7	−0.9515	.5845	−.0025	−37	−90
3 Sagittarii	5	3.39	9.6	27 47.1	11 44.3	+ 6 47.5	+0.7535	.5820	+.0156	+62	+ 1
B. A. C. 6024	6½	3.40	9.2	27 1.3	12 52.4	+ 7 52.9	−0.0181	.5813	.0189	+15	−44
B. A. C. 6063	6½	+3.47	− 8.9	−28 2.9	15 22.4	+10 17.0	+1.1043	.5801	+.0261	+62	+28
B. A. C. 6194	6	3.58	7.0	27 5.2	23 59.6	− 5 25.8	+0.4370	.5750	.0503	+43	−18
λ Sagittarii	3	3.61	5.7	25 29.3	2 4 5.0	− 1 29.7	−1.0104	.5724	.0613	−35	−90
B. A. C. 6369	6	3.69	3.9	25 8.2	11 3.9	+ 5 13.5	−0.8919	.5679	.0796	−26	−90
φ Sagittarii	3½	3.75	4.5	27 6.9	11 21.5	+ 5 30.4	+1.2201	.5677	.0804	+63	+41
σ Sagittarii	2½	+3.80	− 3.4	−26 26.8	15 24.8	+ 9 24.7	+0.8618	.5648	+0.905	+64	+ 7
B. A. C. 6490	6½	3.80	2.3	25 1.0	18 30.1	−11 36.8	−0.3582	.5621	.0981	+ 5	−66
B. A. C. 6562	6½	3.90	1.5	26 6.7	23 5.2	− 7 11.7	+1.2776	.5585	.1090	+64	+51
ψ Sagittarii	6	3.89	1.1	25 27.9	3 0 5.9	− 6 13.1	+0.7044	.5577	.1114	+65	− 3
B. A. C. 6576	6	3.86	− 0.7	24 23.2	0 7.4	− 6 11.7	−0.4381	.5577	.1114	+ 2	−72
χ¹ Sagittarii	6	+3.93	+ 0.1	−24 44.6	4 21.2	− 2 6.9	+0.4329	.5543	+.1210	+50	−19
χ² Sagittarii	6½	3.92	0.1	24 39.0	4 24.2	− 2 4 0	+0.3399	.5543	.1211	+44	−24
χ³ Sagittarii	6	3.92	0.2	24 12.0	4 28.0	− 2 0.4	−0.1327	.5539	.1212	+19	−51
B. A. C. 6699	6½	3.94	1.5	23 34.4	8 57.4	+ 2 19.5	−0.2344	.5506	.1309	+15	−57
*h*¹ Sagittarii	6	3.98	1.0	24 59.0	9 5.6	+ 2 27.4	+1.2888	.5505	.1312	+65	+51
53 Sagittarii	6	+3.97	+ 1.9	−23 42.1	10 49.1	+ 4 7.3	+0.1495	.5490	+.1348	+35	−35
B. A. C. 6727	6½	3.97	1.9	23 42.2	10 56.9	+ 4 14.8	+0.1700	.5490	.1351	+36	−34
B. A. C. 6864	6	4.07	4.2	23 4.2	20 36.5	−10 25.2	+0.8915	.5411	.1542	+67	+ 8
B. A. C. 6878	6½	4.06	4.6	22 56.1	21 41.5	− 9 22.4	+0.9152	.5402	.1562	+67	+ 9
B. A. C. 6889	6	+4.02	+ 5.1	−21 39.3	22 17.1	− 8 48.0	−0.3661	.5398	+.1572	+11	−66

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

STAR'S—					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
JUPITER				-21 20.9	**3** 22 48.4	- 8 17.8	-0.6146	.5376	+.1579	- 2	-87
4 Capricorni	6	+4.11	+ 6.2	22 11.0	**4** 4 22.1	- 2 55.0	+1.1932	.5349	.1680	+68	+32
B. A. C. 7053	5½	4.07	8.3	18 59.1	10 4.0	+ 2 35.8	-1.2738	.5305	.1774	-47	-90
o Capricorni	5½	4.06	8.4	18 58.9	10 4.7	+ 2 36.4	-1.2747	.5305	.1774	-47	-90
υ Capricorni	5½	4.10	9.6	18 33.9	14 59.3	+ 7 21.6	-0.8387	.5267	.1850	-11	-90
B. A. C. 7202	6	+4.13	+10.3	-18 38.6	19 4.6	+11 19.1	+0.0157	.5237	+.1910	+35	-43
B. A. C. 7209	6½	4.13	10.5	18 28.9	19 32.2	+11 45.9	-0.0720	.5233	.1917	+30	-47
19 Capricorni	6	4.16	11.1	18 22.9	22 14.5	- 9 36.8	+0.3418	.5213	.1954	+53	-25
21 Capricorni	6	4.17	11.8	18 0.1	**5** 1 16.3	- 6 40.6	+0.5280	.5193	.1994	+64	-15
θ Capricorni	4	4.18	12.4	17 42.8	3 49.5	- 4 12.1	+0.7273	.5174	.2027	+72	- 4
29 Capricorni	6	+4.17	+13.8	-15 40.4	8 50.3	+ 0 39.6	-0.4642	.5141	+.2085	+13	-72
B. A. C. 7487	6	4.18	16.0	14 1.2	18 27.1	+ 9 59.4	-0.2162	.5083	.2189	+27	-55
42 Capricorni	5	4.22	16.4	14 35.2	22 16.2	-10 18.1	+1.2480	.5061	.2226	+76	+33
λ Capricorni	5½	4.18	17.6	11 55.4	**6** 0 56.3	- 7 42.6	-1.0752	.5047	.2249	-20	-90
B. A. C. 7620	6	4.18	18.7	10 52.7	4 43.3	- 4 2.1	-1.3652	.5027	.2281	-50	-90
B. A. C. 7697	6½	+4.23	+19.6	-11 2.1	12 6.4	+ 3 8.4	+0.5111	.4993	+.2336	+70	-17
*e*¹ Aquarii	6	4.22	19.7	11 24.9	13 51.0	+ 4 50.1	+1.3369	.4986	.2348	+79	+42
θ Aquarii	4½	4.20	20.9	8 23.1	17 19.4	+ 8 12.7	-1.1811	.4971	.2370	-27	-90
B. A. C. 7774	6	4.22	20.6	9 38.5	17 20.6	+ 8 13.9	+0.2094	.4971	.2370	+52	-32
ρ Aquarii	5½	4.21	21.1	8 25.6	19 10.5	+10 0.8	-0.6944	.4964	.2383	+ 5	-90
B. A. C. 7986	6	+4.25	+24.3	- 5 37.8	**7** 14 40.0	+ 4 58.4	+0.9486	.4908	+.2466	+85	+ 8
B. A. C. 8152	6½	4.24	26.4	- 0 22.3	**8** 6 43.1	- 3 24.4	-0.8943	.4887	.2493	- 4	-90
9 Piscium	6	4.26	26.9	+ 0 27.6	8 50.2	- 1 20.7	-1.2903	.4886	.2494	-34	-90
15 Piscium	6½	4.26	27.2	0 38.8	13 31.2	+ 3 12.9	-0.3294	.4885	.2494	+26	-62
16 Piscium	6	4.28	27.4	1 26.0	14 2.7	+ 3 43.6	-1.0718	.4885	.2494	-16	-89
λ Piscium	5	+4.29	+27.5	+ 1 7.0	17 15.6	+ 6 51.3	+0.0805	.4886	+.2492	+48	-39
19 Piscium	6	4.26	28.0	2 49.1	19 43.4	+ 9 15.2	-1.1956	.4886	.2489	-25	-87
B. A. C. 8276	6½	4.28	27.8	1 32.8	21 5.7	+10 35.4	+0.5580	.4887	.2488	+78	-14
22 Piscium	6	4.29	28.0	2 15.6	22 52.9	-11 40.3	+0.2092	.4888	.2485	+55	-32
25 Piscium	6	4.29	27.9	1 25.2	23 30.8	-11 3.4	+1.2987	.4889	.2483	+90	+35
45 Piscium	6	+4.33	+29.1	+ 7 1.5	**9** 17 55.4	+ 6 51.6	-0.4049	.4918	+.2425	+22	-65
51 Piscium	6	4.35	29.2	6 17.4	21 40.5	+10 30.6	+1.3173	.4927	.2408	+90	+39
75 Piscium	6	4.40	29.2	12 18.6	**10** 16 30.3	+ 4 49.5	-0.9478	.4988	.2286	- 9	-78
η Piscium	3½	4.47	28.7	14 43.5	**11** 5 54.0	- 6 9.4	-0.6434	.5046	.2167	+ 9	-74
101 Piscium	6	4.47	28.7	14 2.7	8 11.2	- 3 56.1	+0.6035	.5057	.2144	+83	- 7
105 Piscium	6	+4.48	+28.4	+15 47.6	10 13.6	- 1 57.3	-0.9030	.6067	+.2122	- 6	-74
3 Arietis	6½	4.50	28.2	16 48.5	13 50.7	+ 1 33.6	-1.2679	.6085	.2082	-36	-73
4 Arietis	6	4.50	28.2	16 21.4	13 41.3	+ 1 22.8	-0.5921	.6090	.2077	+11	-70
ι Arietis	6	4.53	27.8	17 13.7	19 26.7	+ 6 59.7	-0.5859	.5114	.2016	+12	-68
B. A. C. 632	6	4.54	27.5	17 40.4	22 43.4	+10 10.6	-0.4249	.5132	.1975	+20	-59
15 Arietis	6	+4.57	+27.1	+18 55.9	**12** 2 14.2	-10 24.8	-1.1319	.5152	+.1928	-24	-71
θ Arietis	5½	4.58	26.7	19 20.6	6 2.7	- 6 43.2	-0.8634	.5173	.1876	- 5	-71
26 Arietis	6	4.60	25.9	19 19.2	12 19.2	- 0 38.1	+0.3122	.5210	.1785	+62	-17
ν Arietis	5½	4.65	25.3	21 26.4	16 20.8	+ 3 16.0	-1.3250	.5234	.1723	-53	-69
μ Arietis	5½	4.60	25.2	19 29.8	18 7.6	+ 4 59.5	+1.1259	.5245	.1694	+90	+33
ε Arietis	4½	+4.64	+24.0	+20 51.5	**13** 2 18.7	-11 4.7	+0.9541	.5292	+.1558	+90	+22
64 Arietis	6	4.74	21.6	24 17.8	14 11.1	+ 0 24.8	-1.1133	.5363	.1338	-26	-66
66 Arietis	6½	4.68	21.7	22 23.3	16 9.7	+ 2 19.5	+1.2459	.5375	.1299	+90	+50
7 Tauri	6	4.73	20.8	24 3.6	18 55.5	+ 4 59.8	-0.2405	.5391	.1243	+30	-39
9 Tauri	6	4.70	21.0	22 48.7	20 7.4	+ 6 9.3	+1.2779	.5397	.1219	+90	+56
11 Tauri	6	4.75	20.1	24 56.3	21 50.2	+ 7 48.7	-0.8527	.5407	.1184	- 6	-65
g Pleiadum	5½	+4.72	+20.7	+23 54.6	23 43.0	+ 9 37.8	+0.4964	.5418	+.1145	+76	0
b Pleiadum	4	4.72	20.1	23 44.0	23 45.2	+ 9 39.9	+0.6933	.5418	.1144	+90	+11
m Pleiadum	7	4.74	19.9	24 27.6	23 52.1	+ 9 46.5	-0.0902	.5419	.1142	+38	-30
e Pleiadum	5	4.73	19.9	24 5.3	23 53.8	+ 9 48.2	+0.3167	.5419	.1142	+63	- 9
c Pleiadum	5	4.73	20.0	23 59.4	**14** 0 11.1	+10 5.0	+0.4606	.5420	.1136	+74	- 2
d Pleiadum	5	+4.71	+20.0	+23 34.3	0 25.4	+10 18.7	+0.9465	.5422	+.1130	+90	+26

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	°	d h m	h m				°	°
η Tauri	3	+4.72	+19.8	+23 43.9	**14** 0 57.1	+10 49.4	+0.8306	.5425	+.1119	+90	+19
f Pleiadum	4	4.71	19.8	23 41.0	1 43.3	+11 34.0	+0.9683	.5429	.1103	+90	+28
h Pleiadum	5½	4.72	19.7	23 46.1	1 43.8	+11 34.5	+0.8776	.5429	.1103	+90	+22
B. A. C. 1192	6	4.76	19.4	25 12.8	2 13.0	−11 57.3	−0.6552	.5432	.1192	+ 6	−63
p Tauri	6	4.77	17.2	26 10.0	11 30.0	− 2 59.2	−0.7789	.5579	.0887	− 2	−64
χ^1 Tauri	5	+4.74	+16.3	+25 20.6	16 46.1	+ 2 6.1	+0.5577	.5505	+.0766	+82	+ 7
χ^2 Tauri	8½	4.74	16.3	25 20.9	16 46.3	+ 2 6.3	+0.5531	.5505	.0766	+82	+ 7
B. A. C. 1648	6½	4.69	9.8	27 50.0	**15** 18 13.2	+ 2 39.1	−0.9836	.5598	+.0136	−17	−62
B. A. C. 1746	6½	4.64	8.3	27 35.0	**16** 0 38.1	+ 8 50.2	−0.6753	.5612	−.0027	+ 4	−58
125 Tauri	6	4.56	8.4	25 49.7	2 18.4	+10 26.9	+1.2075	.5615	.0071	+90	+57
136 Tauri	5	+4.57	+ 6.3	+27 35.0	8 3.8	− 8 0.2	−0.7639	.5623	−.0221	− 1	−63
139 Tauri	5½	4.50	6.4	25 56.3	10 5.6	− 6 2.9	+0.9521	.5625	.0289	+90	+35
ε Geminorum	3½	4.28	1.8	25 15.0	**17** 5 38.5	−11 12.8	+0.6443	.5627	.0782	+90	+12
37 Geminorum	6	4.21	+ 0.3	25 31.6	10 29.0	− 6 32.9	−0.0578	.5622	.0905	+40	−26
39 Geminorum	6½	4.23	− 0.2	26 14.4	11 57.5	− 5 7.6	−0.9502	.5620	.0943	−14	−64
40 Geminorum	6½	+4.21	− 0.3	+26 4.7	12 14.4	− 4 51.3	−0.8050	.5620	−.0950	− 3	−64
ω Geminorum	6	4.15	0.0	24 23.3	13 32.3	− 3 36.2	+0.8596	.5618	.0982	+90	+23
48 Geminorum	6	4.09	0.9	24 19.8	17 49.6	+ 0 31.7	+0.4749	.5612	.1089	+75	0
52 Geminorum	6	4.11	1.4	25 5.6	18 46.3	+ 1 26.3	−0.4345	.5610	.1112	+19	−49
A Geminorum	5½	4.07	2.3	25 17.0	22 32.3	+ 5 4.2	−1.0683	.5604	.1203	−22	−65
58 Geminorum	6	+4.00	− 1.5	+23 10.7	22 34.7	+ 5 6.5	+1.1449	.5604	−.1204	+90	+41
B. A. C. 2514	6½	3.95	3.6	24 29.7	**18** 5 19.0	+11 36.2	−1.1064	.5589	.1364	−25	−66
84 Geminorum	6½	3.82	4.3	22 38.9	11 20.2	− 6 35.5	−0.0325	.5576	.1503	+41	−30
7 Cancri	6½	3.74	5.2	22 24.6	16 3.0	− 2 2.8	−0.5169	.5562	.1607	+15	−58
μ^1 Cancri	6	3.75	5.7	22 58.8	17 6.5	− 1 1.5	−1.2817	.5559	.1629	−45	−67
μ^2 Cancri	5½	+3.71	− 5.4	+21 56.0	17 46.0	− 0 23.4	−0.2980	.5558	−.1644	+27	−46
B. A. C. 2788	6	3.61	6.2	21 7.8	23 17.5	+ 4 56.2	−0.4029	.5543	.1760	+21	−53
B. A. C. 2854	6	3.49	6.7	19 23.7	**19** 4 18.9	+ 9 47.1	+0.4855	.5529	.1862	+74	− 8
η Cancri	6	3.52	7.2	20 51.1	4 44.5	+10 11.7	−1.1010	.5526	.1870	−22	−69
35 Cancri	6½	3.49	7.3	20 0.3	5 54 7	+11 19.4	−0.4448	.5522	.1910	+19	−57
39 Cancri	6	+3.49	− 8.0	+20 26.1	8 1.1	−10 38.5	−1.2912	.5519	−.1934	−43	−70
40 Cancri	6	3.48	8.0	20 23.9	8 3.3	−10 36.4	−1.2612	.5519	.1935	−39	−70
ε Cancri	6	3.45	7.7	19 58.3	8 10.7	−10 29.3	−0.8447	.5519	.1937	− 4	−70
42 Cancri	6½	3.45	7.8	20 8.8	8 17.8	−10 22.5	−1.0481	.5518	.1940	−18	−70
B. A. C. 2925	6½	3.45	7.8	20 0.5	8 23.7	−10 16.8	−0.9243	.5518	.1942	− 9	−70
δ Cancri	4	+3.40	− 7.5	+18 35.9	10 4.8	− 8 39.2	+0.2007	.5513	−.1973	+55	−23
π^1 Cancri	6½	3.15	8.8	15 29.0	22 29.1	+ 3 19.2	+0.8098	.5482	.2191	+90	+ 6
π^2 Cancri	6	3.14	8.9	15 26.6	23 46.5	+ 4 34.0	+0.5660	.5479	.2212	+80	− 7
7 Leonis	6½	3.01	10.4	14 55.2	**20** 9 6.0	−10 25.8	−1.0292	.5460	.2354	−15	−75
18 Leonis	6	2.91	10.3	12 22.1	13 53.8	− 5 47.8	+0.4161	.5451	.2420	+68	−18
B. A. C. 3345	6	+2.89	−10.3	+11 59.4	14 25.8	− 5 16.8	+0.6694	.5450	−.2427	+89	− 4
A Leonis	5	2.75	11.1	10 35.5	23 43.0	+ 3 41.5	−0.2261	.5440	.2540	+31	−53
B. A. C. 3538	6½	2.66	11.7	9 34.4	**21** 6 16.1	−10 1.4	−0.8857	.5436	.2607	− 4	−81
44 Leonis	6	2.65	11.8	9 24.0	7 38.8	+11 21.2	−1.0715	.5436	.2619	−16	−81
B. A. C. 3562	6½	2.65	11.9	9 23.3	7 48.4	+11 30.5	−1.1018	.5436	.2620	−18	−81
48 Leonis	6	+2.57	−11.8	+ 7 34.7	12 2.1	− 8 24.4	−0.4017	.5436	−.2657	+22	−65
35 Sextantis	6	2.50	11.7	5 23.0	15 57.2	− 4 37.2	+0.7446	.5437	.2687	+90	− 3
37 Sextantis	6	2.51	12.3	7 0.7	17 11.9	− 3 25.0	−1.2153	.5438	.2695	−27	−83
d Leonis	5	2.42	12.4	4 16.1	23 49.2	+ 2 58.8	−0.2773	.5444	.2734	+29	−58
p^3 Leonis	6	2.37	12.2	2 36.8	**22** 2 44.6	+ 5 48.3	+0.5657	.5447	.2748	+78	−14
B. A. C. 3836	6	2.34	12.6	2 55.8	5 54.1	+ 8 51.3	−0.6177	.5453	.2760	+11	−82
75 Leonis	5½	+2.33	−12.8	+ 2 40.6	7 26.4	+10 20.5	−0.7916	.5456	−.2765	+ 2	−75
76 Leonis	6	2.32	12.8	2 18.9	8 11.3	+11 3.9	−0.6397	.5457	.2767	+10	−84
79 Leonis	5½	2.30	13.0	+ 2 4.4	10 30.5	−10 41.6	−1.0418	.5462	.2772	−14	−88
υ Leonis	4½	2.22	13.0	− 0 9.2	16 21.0	− 5 3.1	−0.4606	.5477	.2482	+19	−70
b Scorpii	5	2.37	13.5	25 23.0	**27** 0 38.2	− 0 41.8	+0.7878	.5989	.1185	+65	+ 3
A^2 Scorpii	5	+2.37	−13.4	−24 57.9	1 38.1	+ 0 15.7	+0.2557	.5991	−.1156	+38	−20

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

OCTOBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. $\Delta\alpha$	$\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5253	6	+2.37	-13.3	-24 10.3	27 1 45.4	+ 0 22.7	-0.5479	.5991	-.1153	- 4	-81
B. A. C. 5254	6	2.37	13.3	23 36.9	1 46.8	+ 0 24.0	-1.1041	.5991	.1153	-39	-90
B. A. C. 5255	6	2.34	13.4	25 3.0	1 51.4	+ 0 28.4	+0.3149	.5991	.1150	+42	-26
3 Scorpii	6	2.38	13.4	24 53.2	2 1.8	+ 0 38.4	+0.1316	.5991	.1145	+31	-35
4 Scorpii	6	2.39	13.5	25 54.6	2 19.4	+ 0 55.2	+1.1184	.5992	.1136	+64	+28
B. A. C. 5286	6½	+2.39	-13.2	-24 28.9	3 30.7	+ 2 3.6	-0.4383	.5995	-.1101	+ 2	-72
π Scorpii	3	2.40	13.3	25 45.9	3 35.4	+ 2 8.1	+0.8131	.5995	.1099	+64	+ 4
B. A. C. 5314	6	2.43	13.0	25 31.7	5 17.0	+ 3 45.5	+0.4146	.5998	.1048	+46	-20
B. A. C. 5347	5	2.45	13.1	26 0.1	7 3.5	+ 5 27.6	+0.7071	.6000	.0994	+64	- 3
σ Scorpii	3½	2.50	12.8	25 18.1	11 58.3	+10 10.1	-0.4436	.6005	.0844	- 2	-72
α Scorpii	1½	+2.55	-12.4	-26 9.8	15 1.9	-10 54.0	+0.1752	.6004	-.0749	+30	-33
22 Scorpii	5	2.54	12.0	24 50.9	15 21.4	-10 35.2	-1.1682	.6004	.0739	-48	-90
25 Scorpii	6	2.63	11.4	25 18.6	21 35.0	- 4 37.2	-1.1061	.6002	.0544	-44	-90
B. A. C. 5800	6½	2.77	10.3	26 50.4	28 7 50.9	+ 5 13.1	+0.0428	.5978	.0220	+18	-40
A^1 Ophiuchi	5½	2.79	10.1	26 25.5	8 18.4	+ 5 39.5	-0.3879	.5977	.0206	- 4	-68
A^2 Ophiuchi	6	+2.79	-10.1	-26 25.4	8 18.5	+ 5 39.6	-0.3888	.5977	-.0206	- 4	-68
38 Ophiuchi	6½	2.81	10.0	26 29.7	9 9.0	+ 6 28.0	-0.3326	.5973	.0179	- 1	-64
43 Ophiuchi	6	2.87	10.1	28 1.5	11 16.5	+ 8 30.3	+1.1893	.5965	.0114	+62	+38
B. A. C. 5909	6½	2.87	9.1	26 10.6	14 30.1	+11 35.9	-0.7091	.5952	-.0013	-23	-90
3 Sagittarii	5	2.99	8.5	27 47.1	20 31.2	- 6 37.7	+0.9786	.5922	+.0171	+62	+17
B. A. C. 6024	6½	+2.99	- 8.1	-27 1.3	21 37.0	- 5 34.6	+0.2198	.5916	+.0204	+28	-30
B. A. C. 6194	6	3.15	6.1	27 5.2	29 8 24.7	+ 4 47.1	+0.6820	.5849	.0520	+61	- 4
λ Sagittarii	3	3.17	4.9	25 29.3	12 22.9	+ 8 36.0	-0.7372	.5820	.0631	-19	-90
B. A. C. 6339	6	3.26	3.5	25 8.2	19 10.0	- 8 52.6	-0.6139	.5767	.0815	-10	-88
σ Sagittarii	2½	3.35	3.2	26 26.8	23 23.7	- 4 48.7	+1.1169	.5731	.0925	+64	+29
B. A. C. 6490	6½	+3.36	- 2.2	-25 1.0	30 2 24.2	- 1 55.0	-0.0832	.5705	+.1001	+19	-48
ψ Sagittarii	6	3.43	1.3	25 27.9	7 51.3	+ 3 20.0	+0.9698	.5656	.1133	+65	+15
B. A. C. 6576	6	3.42	0.7	24 23.2	7 52.8	+ 3 21.4	-0.1574	.5656	.1133	+17	-52
χ^1 Sagittarii	6	3.47	0.2	24 44.6	12 0.3	+ 7 19.9	+0.7053	.5619	.1228	+65	- 3
χ^2 Sagittarii	6½	3.47	- 0.2	24 39.0	12 3.2	+ 7 22.7	+0.6135	.5618	.1229	+61	- 9
χ^3 Sagittarii	6	+3.45	0.0	-24 12.0	12 7.0	+ 7 26.3	+0.1473	.5617	+.1230	+34	-35
B. A. C. 6699	6½	3.49	+ 1.1	23 34.4	16 29.9	+11 39.8	+0.0500	.5577	.1327	+29	-40
53 Sagittarii	6	3.51	1.4	23 42.1	18 19.0	-10 35.0	+0.4303	.5560	.1365	+51	-19
B. A. C. 6727	6½	3.51	1.4	23 42.2	18 26.7	-10 27.5	+0.4506	.5559	.1368	+52	-18
B. A. C. 6864	6	3.61	3.5	23 4.2	31 3 53.8	- 1 20.3	+1.1690	.5471	.1557	+67	+30
B. A. C. 6878	6½	+3.62	+ 3.7	-22 56.1	4 57.4	- 0 18.9	+1.1929	.5460	+.1577	+67	+33
B. A. C. 6889	6	3.59	4.2	21 39.3	5 32.3	+ 0 14.9	-0.0738	.5455	.1587	+26	-48
JUPITER				20 54.0	10 8.2	+ 4 41.4	-0.1276	.5367	.1660	+24	-50
σ Capricorni	5½	3.61	6.4	19 29.8	12 11.9	+ 6 40.9	-1.2773	.5394	.1706	-50	-90
B. A. C. 7053	5½	3.64	7.4	18 59.1	17 6.3	+11 25.7	-0.9692	.5351	.1786	-20	-90
ο Capricorni	5½	+3.64	+ 7.4	-18 59.0	17 6.9	+11 26.3	-0.9698	.5351	+.1786	-20	-90
υ Capricorni	5½	+3.69	+ 8.5	-18 33.9	21 56.8	- 7 53.3	-0.5389	.5307	+.1861	+ 6	-78
NOVEMBER.											
B. A. C. 7202	6	+3.73	+ 9.3	-18 38.7	1 1 58.5	- 3 59.2	+0.3075	.5274	+.1917	+51	-26
B. A. C. 7209	6½	3.73	9.3	18 29.0	2 25.6	- 3 33.1	+0.2207	.5270	.1924	+46	-31
19 Capricorni	6	3.74	9.7	18 22.9	5 5.7	- 0 58.0	+0.6308	.5248	.1960	+70	- 9
B A. C 7263	6	3.71	10.6	16 29.9	6 32.0	+ 0 25.6	-1.1148	.5235	.1979	-28	-90
21 Capricorni	6	3.77	10.6	18 0.1	8 5.1	+ 1 55.8	+0.8151	.5223	.1998	+72	+ 2
θ Capricorni	4	3.77	11.1	17 42.8	10 36.2	+ 4 22.3	+1.0125	.5204	.2030	+73	+14
29 Capricorni	6	+3.78	+12.6	-15 40.4	15 33.6	+ 9 10.5	-0.1714	.5166	+.2088	+27	-53
B. A. C. 7487	6½	3.82	14.8	14 1.2	2 1 4.7	- 5 35.5	+0.0701	.5100	.2186	+42	-39
λ Capricorni	5½	3.84	16.3	11 55.4	7 30.8	+ 0 39.4	-0.7878	.5059	.2244	- 2	-90
B. A. C. 7620	6	3.84	17.3	10 52.8	11 16.3	+ 4 18.4	-1.0799	.5037	.2274	-20	-90
B. A. C. 7697	6½	3.91	18.3	11 2.1	18 36.8	+11 26.3	+0.7800	.5029	.2326	+73	- 2
θ Aquarii	4½	+3.89	+19.9	- 8 23.1	23 48.4	- 7 30.8	-0.9105	.4974	+.2357	- 8	-90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	°	d h m	h m				°	°
B. A. C. 7774	6	+3.92	+19.4	- 9 38.5	**2** 23 49.7	- 7 29.6	+0.4742	.4973	+.2357	+68	-18
ρ Aquarii	5½	3.91	20.1	8 25.7	**3** 1 39.1	- 5 43.2	-0.4282	.4966	.2367	+19	-68
B. A. C. 7986	6	4.02	23.2	5 37.8	21 5.8	-10 48.3	+1.1820	4903	.2446	+85	+25
B. A. C. 8152	6½	4.07	26.2	- 0 22.3	**4** 13 8.2	+ 4 48.3	-0.6858	.4880	.2469	+ 7	-89
κ Piscium	4½	4.07	26.6	+ 0 35.7	15 4.4	+ 6 41.4	-1.2794	.4879	.2470	-33	-90
9 Piscium	6	+4.07	+26.5	+ 0 27.6	15 15.2	+ 6 51.8	-1.0852	.4879	+.2470	-17	-90
15 Piscium	6½	4.11	26.9	0 38.8	19 56.2	+11 25.4	-0.1355	.4877	.2469	+36	-50
16 Piscium	6	4.11	27.1	1 26.0	20 27.7	+11 56.1	-0.8776	.4877	.2468	- 4	-89
λ Piscium	5	4.13	27.2	1 7.0	23 40.6	- 8 56.2	+0.2665	.4878	.2466	+58	-29
19 Piscium	6	4.13	27.9	2 49.1	**5** 2 8.4	- 6 32.3	-1.0132	.4879	.2464	-12	-88
B. A. C. 8276	6½	+4.15	+27.6	+ 1 32.8	3 30.7	- 5 12.3	+0.7352	.4879	+.2462	+90	- 5
22 Piscium	6	4.17	28.0	2 15.6	5 18.0	- 3 27.8	+0.3828	.4881	.2459	+65	-23
45 Piscium	6	4.28	29.6	7 1.5	**6** 0 20.1	- 8 56.2	-0.2752	.4915	.2399	+28	-57
75 Piscium	6	4.47	30.4	12 18.6	22 52.7	-11 0.6	-0.8742	.4995	.2264	- 4	-78
η Piscium	3½	4.61	30.3	14 43.5	**7** 12 13.6	+ 1 57.7	-0.6042	.5060	.2146	+11	-72
101 Piscium	6	+4.62	+30.0	+14 2.7	14 30.2	+ 4 10.3	+0.6350	.5071	+.2124	+86	- 5
105 Piscium	6	4.65	30.2	15 47.7	16 32.0	+ 6 8.6	-0.8740	.5082	.2102	- 5	-74
3 Arietis	6½	4.70	30.0	16 48.5	20 8.0	+ 9 38.4	-1.2480	.5102	.2063	-34	-73
4 Arietis	6	4.69	30.0	16 21.4	20 58.4	+10 27.3	-0.5742	.5107	.2053	+12	-69
ι Arietis	6	4.74	29.6	17 13.8	**8** 1 42.3	- 8 57.2	-0.5812	.5134	.1998	+12	-68
B. A. C. 632	6	+4.78	+29.2	+17 40.5	4 57.9	- 5 47.3	-0.4289	.5153	+.1958	+20	-59
15 Arietis	6	4.82	29.0	18 55.9	8 27.4	- 2 24.1	-1.1431	.5175	.1912	-25	-71
θ Arietis	5½	4.87	28.7	19 20.6	12 14.4	+ 1 16.1	-0.8845	.5198	.1859	- 6	-71
26 Arietis	6	4.91	27.8	19 19.2	18 28.2	+ 7 18.4	+0.2731	.5236	.1769	+59	-19
μ Arietis	5½	4.95	27.1	19 29.9	**9** 0 14.0	-11 6.6	+1.0710	.5273	.1679	+90	+29
ε Arietis	4½	+5.04	+26.0	+20 51.5	8 21.2	- 3 14.8	+0.8796	.5326	+.1542	+90	+17
64 Arietis	6	5.21	23.9	24 17.8	20 7.7	+ 8 8.7	-1.2092	.5400	.1328	-36	-66
66 Arietis	6½	5.17	23.4	22 23.3	22 5.3	+10 2.4	+1.1400	.5411	.1285	+90	+39
7 Tauri	6	5.23	22.9	24 3.6	**10** 0 49.6	-11 8.7	-0.3486	.5428	.1230	+23	-46
9 Tauri	6	5.19	22.7	22 48.7	2 0.9	-10 9.8	+1.1636	.5435	.1206	+90	+42
11 Tauri	6	+5.27	+22.2	+24 56.4	3 42.8	- 8 31.3	-0.9658	.5445	+.1171	-14	-65
g Pleiadum	5½	5.25	21.8	23 54.6	5 34.7	- 6 43.1	+0.3759	.5456	.1130	+67	- 6
b Pleiadum.	4	5.25	21.8	23 44.1	5 36.9	- 6 41.0	+0.5727	.5456	.1129	+83	+ 4
m Pleiadum	7	5.27	21.8	24 27.6	5 43.7	- 6 34.5	-0.2095	.5457	.1127	+31	-36
e Pleiadum	5	5.26	21.8	24 5.3	5 45.5	- 6 32.7	+0.2004	.5457	.1126	+55	-15
c Pleiadum	5	+5.25	+21.8	+23 59.5	6 2.5	- 6 16.4	+0.3394	.5459	+.1120	+64	- 8
d Pleiadum	5	5.24	21.6	23 34.4	6 16.7	- 6 2.6	+0.8238	.5460	.1116	+90	+19
η Tauri	3	5.25	21.6	23 43.9	6 48.1	- 5 32.2	+0.7071	.5463	.1104	+90	+12
f Pleiadum	4	5.25	21.4	23 41.1	7 34.0	- 4 47.9	+0.8427	.5467	.1088	+90	+20
h Pleiadum	5½	5.25	21.4	23 46.1	7 34.5	- 4 47.4	+0.7527	.5467	.1088	+90	-15
B. A. C. 1192	6	+5.29	+21.2	+25 12.9	8 3.5	- 4 19.4	-0.7780	.5470	+.1077	- 2	-65
p Tauri	6	5.37	19.0	26 10.0	17 15.8	+ 4 34.0	-0.9183	.5518	.0875	-12	-64
χ^1 Tauri	5½	5.35	17.8	25 20.7	22 29.5	+ 9 36.9	+0.4025	.5570	.0607	+69	0
χ^2 Tauri	8½	5.35	17.8	25 20.9	22 29.8	+ 9 37.2	+0.3979	.5570	.0607	+68	0
B. A. C. 1648	6½	5.47	10.6	27 50.1	**11** 23 47.4	+10 0.7	-1.1833	.5628	+.0122	-38	-62
B. A. C. 1746	6½	+5.44	+ 8.8	+27 35.0	**12** 6 10.8	- 7 49.8	-0.8861	.5638	-.0044	-10	-63
125 Tauri	6	5.37	8.5	25 49.7	7 50.9	- 6 13.4	+0.9949	.5640	.0088	+90	+40
136 Tauri	5	5.41	6.6	27 35.0	13 35.6	- 0 41.2	-0.9870	.5644	.0237	-18	-63
139 Tauri	5½	5.33	6.2	25 56.3	15 37.3	+ 1 16.1	+0.7278	.5646	.0292	+90	+21
B. A. C. 2154	6½	5.16	1.9	24 41.4	**13** 8 27.8	- 6 30.2	+1.2020	.5635	.0726	+90	+51
ε Geminorum	3½	5.17	+ 0.5	25 15.0	11 12.8	- 3 51.1	+0.3937	.5630	.0795	+68	- 1
37 Geminorum	6	+5.13	- 1.0	+25 31.6	16 5.0	+ 0 50.5	-0.3172	.5621	-.0917	+25	-40
39 Geminorum	6½	5.15	1.7	26 14.4	17 34.2	+ 2 16.4	-1.2148	.5617	.0953	-40	-64
40 Geminorum	6½	5.13	1.7	26 4.7	17 51.2	+ 2 32.9	-1.0698	.5616	.0961	-24	-64
ω Geminorum	6	5.05	1.6	24 23.2	19 9.7	+ 3 48.4	+0.6013	.5613	.0992	+86	+ 8
48 Geminorum	6	5.01	2.9	24 19.8	23 29.1	+ 7 58.5	+0.2095	.5602	.1097	+55	-14
52 Geminorum	6	+5.03	- 3.3	+25 5.6	**14** 0 26.3	+ 8 53.7	-0.7058	.5599	-.1121	+ 3	-65

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

NOVEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	° ′	d h m	h m				°	°
58 Geminorum	6	+4.91	− 3.8	+23 10.6	**14** 4 17.1	−11 23.8	+0.8776	.5588	−.1210	+90	+21
84 Geminorum	6½	4.74	7.3	22 38.8	17 12.7	+ 1 4.3	−0.3182	.5544	.1500	+25	−46
7 Cancri	6½	4.67	8.4	22 24.6	22 0.1	+ 5 41.7	−0.8108	.5527	.1601	− 3	−68
μ^2 Cancri	5½	4.63	8.6	21 55.9	23 44.9	+ 7 22.8	−0.5911	.5520	.1638	+10	−63
B. A. C. 2788	6	4.53	9.8	21 7.8	**15** 5 22.7	−11 11.1	−0.7011	.5499	.1750	+ 4	−69
θ Cancri	6	+4.38	−10.2	+18 30.2	10 29.0	− 6 15.3	+1.1298	.5479	−.1847	+90	+32
B. A. C. 2854	6	4.41	10.5	19 23.7	10 30.3	− 6 14.1	+0.1935	.5479	.1847	+54	−23
35 Cancri	6½	4.41	11.0	20 0.2	12 8.2	− 4 39.6	−0.7473	.5473	.1878	+ 2	−69
ε Cancri	6	4.37	11.6	19 58.3	14 27.3	− 2 25.2	−1.1524	.5464	.1920	−27	−70
B. A. C. 2925	6½	4.37	11.6	20 0.5	14 40.6	− 2 12.3	−1.2331	.5463	.1923	−35	−70
δ Cancri	4	+4.30	−11.5	+18 35.9	16 24.0	− 0 32.5	−0.0959	.5457	−.1954	+38	−39
π^1 Cancri	6½	4.05	13.0	15 29.0	**16** 5 7.4	+11 45.1	+0.5192	.5412	.2163	+76	−10
π^2 Cancri	6	4.02	13.4	15 26.6	6 27.0	−10 58.0	+0.2719	.5408	.2182	+58	−22
7 Leonis	6½	3.89	15.0	14 55.1	16 3.0	− 1 41.1	−1.3437	.5381	.2316	−46	−75
18 Leonis	6	3.76	15.0	12 22.0	20 59.8	+ 3 5.9	+0.1243	.5369	.2378	+50	−32
B. A. C. 3345	6	+3.75	−14.9	+11 59.3	21 32.9	+ 3 37.8	+0.3819	.5367	−.2385	+65	−19
A Leonis	5	3.59	15.9	10 35.4	**17** 7 8.4	−11 5.5	−0.5212	.5350	.2489	+16	−71
B. A. C. 3538	6½	3.49	16.6	9 34.3	13 55.1	− 4 32.1	−1.1863	.5343	.2551	−25	−81
43 Leonis	6	3.46	15.9	7 9.4	14 18.4	− 4 9.5	+1.1787	.5343	.2554	−90	+27
44 Leonis	6	3.47	16.7	9 24.0	15 20.7	− 3 9.2	−1.3740	.5342	.2563	−48	−81
48 Leonis	6	+3.37	−16.7	+ 7 34.6	19 53.4	+ 1 14.7	−0.6880	.5340	−.2597	+ 7	−83
35 Sextantis	6	3.30	16.4	5 22.9	23 56.9	+ 5 10.2	+0.4831	.5340	.2625	+72	−17
d Leonis	5	3.18	17.2	4 16.0	**18** 8 6.0	−10 56.5	−0.5451	.5344	.2669	+15	−76
p^3 Leonis	6	3.13	16.8	2 36.8	11 7.8	− 8 0.6	+0.3175	.5347	.2682	+61	−26
B. A. C. 3836	6	3.09	17.4	2 55.7	14 24.2	− 4 50.7	−0.8812	.5352	.2693	− 4	−87
75 Leonis	5½	+3.08	−17.4	+ 2 40.5	15 59.9	− 3 18.1	−1.0551	.5355	−.2698	−15	−88
76 Leonis	6	3.06	17.4	2 18.8	16 46.4	− 2 33.1	−0.8995	.5357	.2700	− 5	−88
79 Leonis	5½	3.03	17.5	+ 2 4.3	19 10.7	− 0 13.5	−1.3041	.5362	.2705	−36	−88
υ Leonis	4½	2.94	17.2	− 0 9.3	**19** 1 13.8	+ 5 37.5	−0.7005	.5377	.2711	+ 6	−90
B. A. C. 4201	6	2.68	16.6	8 0.3	**20** 0 40.3	+ 4 17.1	+0.8352	.5473	.2653	+82	+ 1
q Virginis	6	+2.66	−16.5	− 8 47.0	3 17.2	+ 6 48.6	+0.9185	.5486	−.2638	+82	+ 6
χ Virginis	5	2.64	17.0	7 19.7	5 44.2	+ 9 10.5	−1.1733	.5501	.2620	−27	−90
B. A. C. 4259	6	2.64	17.0	7 21.9	5 47.8	+ 9 14.0	−1.1527	.5501	.2620	−24	−90
B. A. C. 4312	6½	2.59	16.6	9 40.7	11 6.5	− 9 38.4	−0.2326	.5533	.2578	+28	−56
ψ Virginis	5	2.59	16.9	8 52.8	12 25.5	− 8 22.2	−1.3633	.5541	.2566	−49	−90
75 Virginis	6	+2.51	−15.8	−14 44.4	**21** 5 0.6	+ 7 37.3	+0.3392	.5653	−.2377	+56	−25
83 Virginis	6	2.47	15.7	15 34.2	9 53.3	−11 40.8	+0.0234	.5689	.2303	+38	−42
85 Virginis	6	2.47	15.7	15 9.5	10 20.9	−11 14.3	−0.4943	.5693	−.2295	+11	−74
3 Sagittarii	5	2.90	7.2	27 47.0	**25** 6 57.7	+ 5 37.0	+1.1337	.5995	+.0194	+62	+31
B. A. C. 6194	6	2.99	5.1	27 5.2	18 37.0	− 7 12.6	+0.8638	.5928	.0547	+63	+ 8
B. A. C. 6217	6½	+2.96	− 4.5	−24 58.3	20 0.7	− 5 52.1	−1.2159	.5920	+.0585	−54	−90
λ Sagittarii	3	2.99	4.2	25 29.3	22 30.1	− 3 28.7	−0.5342	.5903	.0658	− 8	−80
B. A. C. 6369	6	3.04	3.0	25 8.2	**26** 5 8.1	+ 2 53.5	−0.3980	.5851	.0845	+ 1	−68
B A. C. 6490	6½	3.11	1.7	25 1.0	12 12.0	+ 9 40.9	+0.1407	.5791	.1030	+31	−35
ψ Sagittarii	6	3.15	0.8	25 27.9	17 31.3	− 9 12.0	+1.1912	.5742	.1166	+65	+35
B. A. C. 6576	6	+3.13	− 0.6	−24 23.2	17 32.7	− 9 10.7	+0.0774	.5742	+.1166	+30	−38
χ^1 Sagittarii	6	3.19	+ 0.1	24 44.6	21 34.1	− 5 18.3	+0.9371	.5705	.1261	+66	+12
χ^2 Sagittarii	6½	3.19	0.1	24 39.0	21 37.0	− 5 15.4	+0.8466	.5704	.1263	+66	+ 6
χ^3 Sagittarii	6	3.17	0.3	24 12.0	21 40.6	− 5 12.0	+0.3858	.5704	.1263	+47	−22
B. A. C. 6699	6½	3.20	1.2	23 34.4	**27** 1 57.1	− 1 5.0	+0.2966	.5662	.1361	+43	−26
53 Sagittarii	6	3.22	1.6	23 42.1	3 43.5	+ 0 37.5	+0.6756	.5645	.1400	+66	− 5
B. A. C. 6727	6½	+3.22	+ 1.6	−23 42.2	3 51.0	+ 0 44.8	+0.6960	.5644	+.1402	+66	− 4
B. A. C. 6889	6	3.27	4.2	21 39.3	14 40.2	+11 10.8	+0.1948	.5536	.1621	+41	−32
σ Capricorni	5½	3.26	5.9	19 29.8	21 9.9	− 6 33.1	−0.9851	.5472	.1739	−23	−90
π Capricorni	5	3.28	6.8	18 36.5	**28** 0 47.4	− 3 3.0	−1.2835	.5437	.1799	−49	−90
B. A. C. 7053	5½	3.31	6.9	18 59.1	1 57.3	− 1 55.4	−0.6750	.5426	.1819	− 3	−90
ο Capricorni	5½	+3.31	+ 6.9	−18 59.0	1 57.9	− 1 54.9	−0.6756	.5426	+.1819	− 3	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
NOVEMBER.											
		s	″	° ′	d h m	h m				°	°
Jupiter				−19 58.3	**28** 2 57.0	− 0 57.8	+0.5505	.5346	+.1786	+64	−13
υ Capricorni	5½	+3.34	+ 7.7	18 33.9	6 41.0	+ 2 38.7	−0.2438	.5381	.1892	+21	−57
B. A. C. 7202	6	3.37	8.4	18 38.7	10 37.0	+ 6 27.1	+0.5972	.5343	.1950	+68	−10
B. A. C. 7209	6½	3.37	8.6	18 29.0	11 3.6	+ 6 52.8	+0.5119	.5339	.1955	+63	−15
19 Capricorni	6	3.39	9.0	18 22.9	13 40.0	+ 9 24.1	+0.9202	.5316	.1991	+72	+ 9
B. A. C. 7263	6	+3.36	+ 9.9	−16 29.9	15 4.5	+10 45.9	−0.8048	.5303	+.2009	− 8	−90
21 Capricorni	6	3.41	9.7	18 0.1	16 35.4	−11 46.1	+1.1056	.5290	.2028	+72	+22
θ Capricorni	4	3.42	10.1	17 42.8	19 3.3	− 9 22.8	+1.3032	.5268	.2059	+73	+42
29 Capricorni	6	3.42	11.6	15 40.4	23 54.4	− 4 40.8	+0.1362	.5227	.2115	+44	−36
B. A. C. 7487	6½	3.47	13.5	14 1.2	**29** 9 14.2	+ 4 21.9	+0.3811	.5153	.2211	+59	−23
λ Capricorni	5½	+3.49	+15.1	−11 55.4	15 33.2	+10 29.6	−0.4657	.5150	+.2264	+15	−71
B. A. C. 7620	6	3.49	16.1	10 52.8	19 14.8	− 9 55.3	−0.7542	.5082	.2293	0	−90
B. A. C. 7697	6½	3.56	16.9	11 2.2	**30** 2 28.3	− 2 54.5	+1.0909	.5037	.2341	+79	+18
θ Aquarii	4½	3.56	18.4	8 23.1	7 35.2	+ 2 3.7	−0.5856	.5009	.2370	+11	−80
B. A. C. 7774	6	3.57	18.0	9 38.6	7 36.4	+ 2 4.9	+0.7879	.5009	.2370	+72	− 1
ρ Aquarii	5½	+3.57	+18.7	− 8 25.7	9 24.3	+ 3 49.8	−0.1072	.5000	+.2379	+35	−49
DECEMBER.											
B. A. C. 8152	6½	+3.77	+24.7	− 0 22.4	**1** 20 32.6	− 9 59.8	−0.3842	.4887	+.2462	+23	−65
κ Piscium	4½	3.78	25.2	+ 0 35.7	22 28.1	− 8 7.2	−0.9772	.4887	.2462	−10	−90
9 Piscium	6	3.78	25.2	0 27.6	22 38.9	− 7 56.8	−0.7841	.4887	.2462	+ 2	−77
15 Piscium	6½	+3.83	+25.5	+ 0 38.8	**2** 3 18.4	− 3 24.7	+0.1561	.4880	+.2460	+51	−35
16 Piscium	6	3.83	25.9	1 26.0	3 49.7	− 2 54.2	−0.5837	.4880	.2459	+13	−79
λ Piscium	5	3.88	25.9	1 7.0	7 1.7	+ 0 12.6	+0.5521	.4880	.2455	+77	−14
19 Piscium	6	3.89	26.7	2 49.0	9 28.9	+ 2 35.9	−0.7264	.4880	.2451	+ 5	−85
B. A. C. 8276	6½	3.91	26.3	1 32.8	10 50.9	+ 3 55.7	+1.0141	.4881	.2448	+90	+12
22 Piscium	6	+3.92	+26.7	+ 2 15.6	12 37.8	+ 5 39.7	+0.6611	.4881	+.2444	+87	− 8
d Piscium	5½	4.07	28.9	7 31.2	**3** 4 45.9	− 2 38.2	−1.2555	.4901	.2393	−32	−83
45 Piscium	6	4.09	28.8	7 1.5	7 37.2	+ 0 8.5	−0.0243	.4907	.2381	+41	−43
75 Piscium	6	4.37	30.3	12 18.6	**4** 6 8.9	− 1 56.7	−0.6651	.4984	.2240	+ 8	−77
η Piscium	3½	4.54	30.4	14 43.5	19 29.5	+11 1.2	−0.4242	.5049	.2123	+20	−61
101 Piscium	6	+4.55	+30.1	+14 2.7	21 46.0	−10 46.2	+0.8072	.5061	+.2100	+90	+ 5
105 Piscium	6	4.60	30.4	15 47.7	23 47.8	− 8 48.0	−0.7040	.5073	.2080	+ 5	−74
3 Arietis	6½	4.66	30.4	16 48.5	**5** 3 23.6	− 5 18.4	−1.0849	.5093	.2041	−20	−73
4 Arietis	6	4.66	30.2	16 21.4	4 13.9	− 4 29.6	−0.4143	.5099	.2030	+21	−59
ι Arietis	6	4.74	30.0	17 13.8	8 57.5	+ 0 5.6	−0.4321	.5128	.1975	+20	−59
B. A. C. 632	6	+4.79	+29.8	+17 40.5	12 12.7	+ 3 15.0	−0.2873	.5149	+.1934	+27	−50
15 Arietis	6	4.85	29.7	18 55.9	15 41.9	+ 6 38.0	−1.0081	.5171	.1890	−15	−71
θ Arietis	5½	4.91	29.5	19 20.7	19 28.4	+10 17.7	−0.7591	.5196	.1838	+ 1	−68
26 Arietis	6	4.98	28.6	19 19.2	**6** 1 41.2	− 7 41.1	+0.3813	.5238	.1748	+66	−13
ν Arietis	5½	5.08	28.5	21 26.4	5 40.2	− 3 49.4	−1.2668	.5266	.1686	−41	−69
μ Arietis	5½	+5.06	+27.8	+19 29.9	7 25.7	− 2 7.2	+1.1631	.5277	+.1659	+90	+37
ε Arietis	4½	5.19	26.9	20 51.5	15 30.8	+ 5 42.5	+0.9534	.5334	.1522	+90	+22
64 Arietis	6	5.43	25.1	24 17.8	**7** 3 13.1	− 6 58.2	−1.1601	.5414	.1307	−31	−66
66 Arietis	6½	5.39	24.5	22 23.3	5 9.9	− 5 5.3	+1.1798	.5428	.1265	+90	+43
7 Tauri	6	5.48	24.0	24 3.6	7 53.1	− 2 27.6	−0.3094	.5446	.1211	+26	−43
9 Tauri	6	+5.46	+23.7	+22 48.7	9 3.8	− 1 19.3	+1.1940	.5454	+.1186	+90	+46
11 Tauri	6	5.55	23.6	24 56.4	10 45.0	+ 0 18.5	−0.9309	.5465	.1150	−12	−65
g Pleiadum	5½	5.53	23.0	23 54.6	12 35.9	+ 2 5.7	+0.4013	.5476	.1112	+68	− 4
b Pleiadum	4	5.53	23.0	23 44.1	12 38.1	+ 2 7.8	+0.5969	.5477	.1110	+85	+ 6
m Pleiadum	7	5.55	23.0	24 27.6	12 44.9	+ 2 14.3	−0.1820	.5477	.1108	+33	−35
e Pleiadum	5	+5.54	+23.0	+24 5.3	12 46.6	+ 2 16.0	+0.2259	.5477	+.1108	+56	−13
c Pleiadum	5	5.54	22.9	23 59.5	13 3.5	+ 2 32.3	+0.3640	.5479	.1102	+66	− 6
d Pleiadum	5	5.53	22.8	23 34.4	13 17.6	+ 2 45.9	+0.8455	.5481	.1097	+90	+20
η Tauri	3	5.54	22.7	23 44.0	13 48.8	+ 3 16.1	+0.7284	.5484	.1087	+90	+13
f Pleiadum	4	+5.55	+22.5	+23 41.1	14 34.2	+ 3 59.9	+0.8618	.5489	+.1070	+90	+22

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N'n.	S'n.
		s	″	°	d h m	h m				°	°
h Pleiadum	5½	+5.55	+22.5	+23 46.1	7 14 34.8	+ 4 0.5	+0.7716	.5489	+.1069	+90	+16
B. A. C. 1192	6	5.61	22.5	25 12.9	15 3.5	+ 4 28.2	−0.7532	.5492	.1059	0	−65
p Tauri	6	5.72	20.4	26 10.0	8 0 10.7	−10 43.5	−0.9141	.5547	.0854	−11	−64
χ^1 Tauri	5½	5.74	18.9	25 20.7	5 21.2	− 5 44.0	+0.3900	.5576	.0732	+68	− 1
χ^2 Tauri	8½	5.74	18.9	25 21.0	5 21.4	− 5 43.8	+0.3852	.5576	.0732	+68	− 1
B. A. C. 1648	6½	+6.01	+11.4	+27 50.1	9 6 20.6	− 5 38.5	−1.2419	.5676	+.0101	−48	−62
B. A. C. 1746	6½	6.02	9.3	27 35.0	12 38.8	+ 0 25.7	−0.9594	.5689	−.0067	−16	−63
125 Tauri	6	5.96	8.8	25 49.8	14 17.5	+ 2 0.8	+0.9078	.5691	.0110	+90	+34
136 Tauri	5	6.05	6.8	27 35.0	19 57.5	+ 7 28.2	−1.0750	.5697	.0260	−25	−63
139 Tauri	5½	5.97	6.3	25 56.3	21 57.4	+ 9 23.7	+0.6262	.5699	.0315	+90	+15
B. A. C. 2154	6½	+5.89	+ 0.9	+24 41.4	10 14 33.5	+ 1 22.8	+1.0656	.5689	−.0751	+90	+39
ε Geminorum	3½	5.89	− 0.3	25 15.0	17 16.3	+ 3 59.8	+0.2568	.5683	.0821	+59	− 9
37 Geminorum	6	5.90	2.0	25 31.5	22 4.6	+ 8 37.5	−0.4597	.5674	.0944	+17	−49
40 Geminorum	6½	5.92	2.6	26 4.6	23 49.2	+10 18.3	−1.2112	.5669	.0988	−39	−64
ω Geminorum	6	5.83	2.8	24 23.2	11 1 6.7	+11 32.9	+0.4486	.5661	.1018	+72	− 1
48 Geminorum	6	+5.81	− 4.2	+24 19.8	5 22.7	− 8 20.4	+0.0514	.5653	−.1124	+46	−22
52 Geminorum	6	5.84	4.6	25 5.6	6 19.2	− 7 25.9	−0.8612	.5650	.1147	− 7	−65
58 Geminorum	6	5.71	5.8	23 10.6	10 7.2	− 3 46.2	+0.7083	.5637	.1238	+90	+11
84 Geminorum	6½	5.59	9.7	22 38.8	22 54.2	+ 8 33.2	−0.5038	.5586	.1527	+15	−57
7 Cancri	6½	5.55	11.0	22 24.5	12 3 38.9	−10 52.2	−1.0025	.5566	.1628	−16	−68
μ^2 Cancri	5½	+5.51	−11.4	+21 55.9	5 22.8	− 9 12.0	−0.7861	.5558	−.1663	− 1	−68
B. A. C. 2788	6	5.41	12.9	21 7.7	10 57.9	− 3 48.6	−0.9047	.5533	.1774	− 8	−69
θ Cancri	6	5.27	13.6	18 30.1	16 2.3	+ 1 5.3	+0.9160	.5509	.1869	+90	+17
B. A. C. 2854	6	5.30	13.8	19 23.6	16 3.6	+ 1 6.5	−0.0191	.5509	.1870	+42	−33
35 Cancri	6½	5.30	14.7	20 0.2	17 41.0	+ 2 40.5	−0.9612	.5502	.1900	−12	−70
δ Cancri	4	+5.20	−15.3	+18 35.8	21 55.6	+ 6 46.6	−0.3163	.5481	−.1974	+26	−51
o^2 Cancri	6	5.05	16.2	16 2.6	13 3 49.7	−11 31.5	+1.1460	.5455	.2072	+90	+31
π^1 Cancri	6½	4.95	17.6	15 28.9	10 37.5	− 4 57.4	+0.2845	.5424	.2176	+59	−22
π^2 Cancri	6	4.93	17.8	15 26.5	11 57.1	− 3 40.5	+0.0357	.5419	.2195	+45	−35
18 Leonis	6	4.67	20.1	12 21.9	14 2 32.5	+10 26.0	−0.1245	.5362	.2380	+36	−46
B. A. C. 3345	6	+4.67	−19.9	+11 59.2	3 5.8	+10 58.2	+0.1339	.5360	−.2386	+50	−32
A Leonis	5	4.51	21.4	10 35.3	12 45.9	− 3 40.6	−0.7793	.5331	.2483	+ 2	−73
B. A. C. 3529	6	4.36	21.2	7 2.3	18 49.8	+ 2 11.6	+1.3493	.5318	.2534	+90	+45
43 Leonis	6	4.35	21.4	7 9.3	20 0.6	+ 3 20.1	+0.9285	.5316	.2542	+90	+ 9
48 Leonis	6	4.29	22.4	7 34.5	15 1 40.1	+ 8 48.7	−0.9519	.5307	.2581	− 8	−83
35 Sextantis	6	+4.20	−22.2	+ 5 22.9	5 47.3	−11 12.0	+0.2279	.5302	−.2605	+55	−30
d Leonis	5	4.09	22.9	4 15.9	14 5.1	− 3 10.0	−0.8085	.5296	.2642	0	−69
p^3 Leonis	6	4.01	22.7	2 36.7	17 10.4	− 0 10.6	+0.0635	.5296	.2652	+46	−39
p^5 Leonis	5	3.96	22.3	0 35.3	20 27.8	+ 3 0.5	+1.2531	.5297	.2661	+90	+31
B. A. C. 3836	6	4.00	23.1	2 55.6	20 31.0	+ 3 3.6	−1.1463	.5297	.2661	−22	−87
75 Leonis	5½	+3.98	−23.1	+ 2 40.4	22 8.8	+ 4 38.2	−1.3216	.5298	−.2664	−38	−88
76 Leonis	6	3.96	23.1	+ 2 18.7	22 56.3	+ 5 24.3	−1.1639	.5298	.2665	−23	−88
υ Leonis	4½	3.83	23.0	− 0 9.4	16 7 35.6	−10 13.1	−0.9587	.5310	.2672	− 9	−90
B. A. C. 4201	6	3.54	21.7	8 0.4	17 7 41.7	−10 54.0	+0.6372	.5385	.2599	+80	−10
q Virginis	6	3.51	21.5	8 47.1	10 23.5	− 8 17.5	+0.7110	.5398	.2582	+81	− 6
B. A. C. 4259	6	+3.49	−22.1	− 7 22.0	12 58.9	− 5 47.3	−1.3890	.5410	−.2564	−54	−90
B. A. C. 4312	6½	3.45	21.4	9 40.8	18 27.9	− 0 30.4	−0.4468	.5439	.2520	+17	−70
75 Virginis	6	3.31	19.7	14 44.4	18 12 57.6	− 6 37.9	+0.1655	.5554	.2317	+46	−34
83 Virginis	6	3.27	19.4	15 34.2	18 0.1	− 1 46.2	−0.1506	.5589	.2245	+29	−51
85 Virginis	6	3.27	19.4	15 9.6	18 28.7	− 1 18.6	−0.6705	.5592	.2238	+ 2	−90
87 Virginis	6	3.26	18.8	17 15.2	19 14.6	− 0 34.3	+1.2647	.5598	.2226	+73	+37
89 Virginis	5	+3.27	−18.7	−17 31.9	20 18.2	+ 0 26.9	+1.3089	.5605	−.2210	+73	+43
B. A. C. 4722	6	3.21	18.2	17 38.1	19 7 6.5	+10 51.6	−0.8784	.5683	.2028	−13	−90
B. A. C. 4739	6½	3.19	18.1	18 9.3	8 26.9	−11 51.0	−0.6266	.5694	.2001	+ 1	−87
B. A. C. 4923	6	3.15	16.2	20 52.1	20 0 11.8	+ 3 18.0	−0.7987	.5809	.1668	−13	−90
B. A. C. 4984	6	3.17	15.3	23 31.4	5 9.2	+ 8 3.8	+1.0710	.5843	.1550	+67	+22
B. A. C. 5023	6	+3.12	−15.1	−21 57.1	7 45.3	+10 33.7	−0.9028	.5860	−.1486	−21	−90

ELEMENTS FOR FACILITATING THE PREDICTION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON.

DECEMBER.

Star's—					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1878.0. Δα	Red'ns from 1878.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N'n.	S'n.
		s	″	°	d h m	h m				°	°
42 Libræ	5½	+3.12	-14.0	-23 25.4	**20** 17 3.5	- 4 30.3	-0.6936	.5915	-.1241	-11	-90
B. A. C. 5197	6	3.14	13.5	24 20.1	19 11.3	- 2 27.5	-0.0358	.5926	.1183	+23	-45
b Scorpii	5	3.14	13.1	25 22.9	21 8.7	- 0 34.9	+0.7929	.5936	.1128	+65	+ 3
A² Scorpii, *mult.*	5	3.13	13.1	24 57.9	22 9.9	+ 0 23.8	+0.2592	.5941	.1100	+38	-28
B. A. C. 5253	6	3.13	13.2	24 10.3	22 17.3	+ 0 30.9	-0.5533	.5942	.1096	- 5	-81
B. A. C. 5254	6	+3.11	-13.3	-23 37.0	22 18.7	+ 0 32.3	-1.1140	.5942	-.1096	-40	-90
B. A. C. 5255	6	3.13	13.1	25 3.0	22 23.5	+ 0 36.9	+0.3199	.5942	.1095	+41	-25
3 Scorpii	6	3.13	13.1	24 53.2	22 34.1	+ 0 47.0	+0.1356	.5943	.1089	+31	-35
4 Scorpii	6	3.15	12.9	25 54.6	22 52.4	+ 1 4.6	+1.1334	.5944	.1080	+64	+30
B. A. C. 5286	6½	3.12	13.0	24 28.9	**21** 0 4.7	+ 2 14.0	-0.4335	.5950	.1046	+ 1	-71
π Scorpii	3	+3.15	-12.8	-25 45.9	0 9.4	+ 2 18.5	+0.8511	.5950	-.1043	+64	+ 7
B. A. C. 5314	6	3.14	12.5	25 31.7	1 52.8	+ 3 57.6	+0.4370	.5957	.0994	+47	-18
B. A. C. 5347	5	3.15	12.2	26 0.1	3 41.1	+ 5 41.5	+0.7408	.5965	.0942	+64	- 1
σ Scorpii	3½	3.11	11.6	25 18.1	8 40.4	+10 28.6	-0.3980	.5982	.0793	+ 1	-68
a Scorpii	1½	3.13	11.1	26 9.8	11 45.6	-10 33.9	+0.2405	.5991	.0699	+33	-29
22 Scorpii	5	+3.10	-11.2	-24 50.8	12 5.3	-10 15.0	-1.1099	.5992	-.0689	-43	-90
B. A. C. 6889	6	3.20	+ 4.5	21 39.3	**25** 0 41.8	- 0 59.5	+0.3287	.5599	+.1651	+48	-25
σ Capricorni	5½	3.18	5.9	19 29.8	7 6.5	+ 5 11.6	-0.8352	.5525	.1770	-13	-90
π Capricorni	5	3.17	6.6	18 36.5	10 40.9	+ 8 38.6	-1.1254	.5491	.1830	-32	-90
B. A. C. 7053	5½	3.19	6.7	18 [illegible].1	11 49.8	+ 9 45.2	-0.5186	.5480	.1849	+ 6	-76
o Capricorni	5½	+3.19	+ 6.7	-18 59.0	11 50.3	+ 9 45.6	-0.5195	.5480	+.1849	+ 6	-76
ν Capricorni	5½	3.21	7.6	18 33.9	16 29.1	- 9 45.0	-0.0825	.5438	.1925	+29	-48
B. A. C. 7202	6	3.23	8.3	18 38.7	20 21.4	- 6 0.5	+0.7589	.5402	.1983	+69	- 1
B. A. C. 7209	6½	3.23	8.4	18 29.0	20 47.6	- 5 35.2	+0.6748	.5399	.1989	+71	- 6
Jupiter				18 35.0	23 18.0	- 3 9.7	+1.2868	.5267	.1989	+72	+41
19 Capricorni	6	+3.24	+ 8.8	-18 22.9	23 21.5	- 3 6.4	+1.0839	.5375	+.2025	+72	+20
B. A. C. 7263	6	3.20	9.3	16 29.9	**26** 0 44.5	- 1 46.0	-0.6275	.5363	.2044	+ 3	-86
21 Capricorni	6	3.23	9.2	18 0.2	2 14.0	- 0 19.4	+1.2720	.5350	.2063	+72	+38
29 Capricorni	6	3.23	11.0	15 40.4	9 25.4	+ 6 38.2	+0.3188	.5287	.2150	+54	-26
18 Aquarii	6	3.21	12.2	13 23.8	13 35.4	+10 40.3	-1.2025	.5252	.2194	-33	-90
B. A. C. 7487	6½	+3.26	+12.6	-14 1.2	18 35.4	- 8 29.0	+0.5724	.5212	+.2244	+71	-13
λ Capricorni	5½	3.26	14.1	11 55.4	**27** 0 47.7	- 2 28.0	-0.2616	.5166	.2298	+25	-58
B. A. C. 7620	6	3.26	14.8	10 52.8	4 25.3	+ 1 3.1	-0.5444	.5139	.2326	+12	-77
B. A. C. 7697	6½	3.33	15.6	11 2.2	11 31.2	+ 7 56.3	+1.2939	.5092	.2373	+79	+37
θ Aquarii	4½	3.31	17.0	8 23.1	16 32.9	-11 10.6	-0.3669	.5062	.2400	+22	-64
B. A. C. 7774	6	+3.35	+16.6	- 9 38.6	16 34.1	-11 9.5	+0.9430	.5062	+.2400	+81	+12
ρ Aquarii	5½	3.33	17.2	8 25.7	18 20.2	- 9 26.4	+0.1097	.5052	.2409	+47	-37
B. A. C. 8152	6½	3.51	23.0	- 0 22.4	**29** 4 58.1	+ 0 13.7	-0.1523	.4917	.2477	+35	-51
κ Piscium	4½	3.52	23.4	+ 0 35.7	6 52.3	+ 2 4.8	-0.7420	.4914	.2476	+ 4	-84
9 Piscium	6	3.52	23.4	0 27.6	7 2.9	+ 2 15.0	-0.5497	.4914	.2476	+14	-77
15 Piscium	6	+3.56	+23.7	+ 0 38.7	11 39.4	+ 6 44.1	+0.3851	.4907	+.2471	+65	-23
16 Piscium	6	3.57	24.1	1 25.9	12 10.4	+ 7 14.2	-0.3510	.4907	.2470	+25	-63
λ Piscium	5	3.60	24.3	1 6.9	15 20.6	+10 19.3	+0.8890	.4904	.2465	+90	+ 1
19 Piscium	6	3.60	24.9	2 49.0	17 46 5	-11 18.7	-0.4937	.4902	.2460	+17	-72
B. A. C. 8276	6½	3.63	24.5	1 32.7	19 7.7	- 9 59.7	+1.2388	.4901	.2456	+90	+30
22 Piscium	6	+3.65	+24.9	+ 2 15.5	20 53.7	- 8 16.6	+0.8867	.4900	+.2452	+90	+ 5
d Piscium	5½	3.79	27.4	7 31.2	**30** 12 55.6	+ 7 19.4	-1.0304	.4908	.2392	-14	-83
45 Piscium	6	3.83	27.1	7 1.4	15 46.2	+10 5.3	+0.1962	.4912	.2378	+54	-31
75 Piscium	6	+4.11	+28.9	+12 18.6	**31** 14 15.3	+ 7 57.4	-0.4611	.4974	+.2229	+19	-65

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1877.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 11	101 Piscium	6	6 53	11 27	266	319	7 49	12 23	133	184	0 56
17	52 Geminor.	6	3 24	7 34	175	116	Star 8′.2	south of	☽'s	limb.	
17	A Geminor.	5½	7 22	11 32	290	295	8 22	12 32	31	72	1 0
18	η Cancri	6	11 24	15 30	331	27	Star 8′.1	north of	☽'s	limb.	
18	35 Cancri	6½	12 40	16 45	238	294	13 36	17 41	67	122	0 56
20	B. A. C. 3538	6½	7 42	11 40	249	205	8 52	12 50	42	12	1 11
20	44 Leonis	6	9 48	13 46	322	310	Star 4′.9	north of	☽'s	limb.	
21	B. A. C. 3836	6	6 47	10 42	222	173	7 49	11 43	74	29	1 2
21	75 Leonis	6	8 35	12 29	282	243	9 22	13 16	3	332	0 47
21	76 Leonis	6	9 41	13 35	271	245	10 37	14 31	9	357	0 56
26	4 Scorpii	6	14 57	18 30	340	330	Star 0′.1	north of	☽'s	limb.	
Feb. 10	*m* Pleiadum	7	5 57	8 33	221	276	6 39	9 15	159	217	0 42
12	136 Tauri	5	11 1	13 28	349	47	Star 1′.1	north of	☽'s	limb.	
13	40 Geminor.	6½	12 29	14 52	342	38	Star 3′.3	north of	☽'s	limb.	
14	7 Cancri	6½	13 15	15 34	266	321	14 4	16 24	48	101	0 49
14	μ^2 Cancri ‡	5	14 49	17 8	247	297	15 36	17 55	72	117	0 47
16	A Leonis ‡	5	16 23	18 34	262	313	17 9	19 19	44	93	0 46
17	*d* Leonis	5	15 27	17 34	309	359	15 46	17 53	89	139	0 19
18	ν Leonis†	4½	7 55	9 59	215	164	8 41	10 45	90	39	0 46
20	75 Virginis	6	11 41	13 37	198	153	12 29	14 25	96	57	0 48
23	τ Scorpii	3½	16 0	17 43	199	185	16 47	18 30	132	128	0 47
Mar. 9	7 Tauri, *mult.*	6	10 42	11 32	5	53	Star 2′.0	north of	☽'s	limb.	
13	A Geminor.	5½	7 51	8 25	309	335	8 31	9 5	9	54	0 40
14	35 Cancri	6½	14 8	14 37	272	326	14 54	15 23	39	90	0 46
16	B. A. C. 3538	6½	10 40	11 1	322	332	Star 0′.9	north of	☽'s	limb.	
16	48 Leonis *	6	17 28	17 49	334	23	Star 3′.6	north of	☽'s	limb.	
17	B. A. C. 3836	6	8 20	8 38	228	187	9 29	9 47	59	30	1 9
21	B. A. C. 4984	6	14 13	14 14	269	259	15 33	15 34	81	87	1 20
24	B. A. C. 6120*	6½	12 33	12 22	314	263	13 12	13 2	32	344	0 39
24	B. A. C. 6127*	5	13 28	13 17	353	307	Star 0′.4	north of	☽'s	limb.	
Apr. 9	52 Geminor. ‡	6	14 44	13 31	164	209	Star 3′.9	south of	☽'s	limb.	
10	7 Cancri	6½	10 12	8 55	232	284	11 20	10 3	74	131	1 8
10	μ^2 Cancri	5	12 18	11 2	237	294	13 16	12 0	72	127	0 58
12	A Leonis ‡	5	17 14	15 49	186	235	17 39	16 14	122	169	0 25
16	75 Virginis	6	9 49	8 8	278	237	10 36	8 56	13	338	0 48
18	*b* Scorpii *	5	20 39	18 49	175	223	Star 0′.9	south of	☽'s	limb.	
21	φ Sagittarii	3½	15 18	13 17	218	181	16 4	14 4	145	115	0 47
24	ι Capricorni	4½	16 41	14 28	3	316	17 3	14 50	37	353	0 22
May 6	37 Geminor.	6	13 48	10 48	196	245	14 12	11 13	134	181	0 25
7	84 Geminor.‖	6½	13 40	10 37	283	337	14 23	11 20	34	85	0 43
8	δ Cancri	4½	12 11	9 5	185	240	12 47	9 40	115	170	0 36
9	18 Leonis ‡	6	16 4	12 52	208	259	16 44	13 33	100	148	0 41
15	B. A. C. 4984	6	14 48	11 13	210	206	15 52	12 17	103	113	1 4
16	B. A. C. 5347	5	12 30	8 51	303	264	13 11	9 32	16	344	0 41
17	43 Ophiuchi	6	19 13	15 30	291	315	20 25	16 42	80	116	1 12
19	B. A. C. 6562*	6½	13 33	9 42	248	196	14 31	10 40	117	70	0 58
20	4 Capricorni	6	19 56	16 1	320	217	21 16	17 21	95	109	1 20
June 4	B. A. C. 2854	6	13 50	8 56	218	272	14 37	9 44	92	144	0 48
7	p^3 Leonis	6	12 31	7 26	197	223	13 31	8 26	86	124	0 59
12	*b* Scorpii	5	18 44	13 18	173	207	Star 4′.0	south of	☽'s	limb.	

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1877.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
June 12	4 Scorpii*	6	20 29	15 3	244	291	21 24	15 58	110	162	0 55
14	3 Sagittarii	5	14 8	8 35	322	284	14 45	9 12	24	351	0 37
14	B. A. C. 6063	6½	19 6	13 32	269	285	20 21	14 47	112	141	1 15
15	φ Sagittarii *	3½	13 20	7 43	202	152	13 45	8 8	156	108	0 24
15	σ Sagittarii	2½	18 51	13 13	358	358	19 16	13 38	32	38	0 25
July 2	π¹ Cancri *	6½	16 7	9 23	209	258	16 45	10 1	104	149	0 38
14	4 Capricorni †	6	15 20	7 48	273	225	16 30	8 59	114	73	1 10
21	101 Piscium †	6	18 33	10 34	328	279	19 21	11 21	85	33	0 47
22	26 Arietis	6	22 35	14 32	308	253	23 49	15 45	116	65	1 14
Aug. 5	B. A. C. 4984	6	17 2	8 4	284	309	18 10	9 12	49	85	1 8
9	B. A. C. 6562	6½	21 10	11 56	213	238	21 19	12 6	194	220	0 9
9	ψ Sagittarii	6	22 30	13 16	325	3	23 26	14 12	80	125	0 56
10	B. A. C. 6878	6½	18 46	9 29	347	334	19 38	10 20	59	57	0 52
11	21 Capricorni	6	23 37	14 15	347	20	0 28	15 5	78	118	0 51
20	e Pleiadum*	5	19 38	9 41	333	16	20 12	10 15	61	108	0 34
20	c Pleiadum †	5	19 41	9 44	298	255	20 31	10 33	97	49	0 49
24	84 Geminor.	6½	2 24	16 9	250	195	3 26	17 12	91	34	1 3
Sept. 2	4 Scorpii ‡	6	19 57	9 9	270	313	21 0	10 12	85	135	1 3
4	B. A. C. 6063	6½	20 6	9 10	254	281	21 11	10 15	131	168	1 5
5	σ Sagittarii	2½	20 32	9 32	309	330	21 45	10 45	89	122	1 13
9	e¹ Aquarii	6	17 8	5 52	254	205	18 0	6 44	159	114	0 52
10	B. A. C. 7986	6	18 10	6 50	327	279	19 14	7 54	95	52	1 5
11	B. A. C. 8276	6½	3 13	15 48	242	291	3 48	16 24	182	229	0 35
11	22 Piscium‡	6	5 20	17 55	301	352	6 19	18 54	110	161	0 59
17	χ¹ Tauri	5½	20 50	9 3	282	235	21 44	9 56	109	57	0 53
17	χ² Tauri	8½	20 51	9 3	283	236	21 44	9 56	108	56	0 53
22	π² Cancri*	6	1 47	13 39	164	117	Star 6′.1	south of	☽'s	limb.	
Oct. 6	B. A. C. 7697	6½	1 59	12 56	267	311	2 52	13 49	158	206	0 53
11	101 Piscium	6	20 11	6 49	15	322	20 26	7 4	44	351	0 15
12	26 Arietis	6	0 49	11 22	319	278	2 12	12 45	102	95	1 23
14	χ¹ Tauri	5	7 22	17 47	182	241	Star 1′.5	south of	☽'s	limb.	
14	χ² Tauri	8½	7 23	17 47	182	241	Star 1′.3	south of	☽'s	limb.	
16	139 Tauri	5½	22 27	8 45	185	138	Star 2′.1	south of	☽'s	limb.	
17	48 Geminor.	6	7 32	17 45	210	230	8 37	18 49	110	157	1 5
20	18 Leonis*	6	2 8	12 10	234	186	2 57	12 59	89	39	0 49
20	B. A. C. 3345	6	3 11	13 13	161	111	Star 4′.6	south of	☽'s	limb.	
Nov. 1	21 Capricor.	6	23 12	8 28	250	279	23 56	9 11	176	212	0 43
7	101 Piscium	6	6 58	15 49	198	251	Star 4′.2	south of	☽'s	limb.	
9	ε Arietis	4½	21 40	6 23	259	204	22 31	7 15	153	97	0 52
10	η Tauri	3	20 23	5 3	307	260	21 13	5 53	89	38	0 50
10	f Pleiadum	4	20 59	5 39	269	219	21 52	6 32	129	75	0 52
10	h Pleiadum	5½	21 1	5 41	249	199	21 57	6 37	72	17	0 56
12	125 Tauri *	6	22 2	6 34	186	140	Star 2′.2	south of	☽'s	limb.	
13	ε Geminorum	3½	0 53	9 20	269	214	1 56	10 23	93	34	1 4
15	B. A. C. 2854*	6	0 37	8 57	326	282	0 57	9 17	12	325	0 20
29	B. A. C. 7487*	6½	2 49	10 13	278	328	3 42	11 6	137	189	0 53
30	B. A. C. 7774	6	1 58	9 19	216	252	Star 1′.3	south of	☽'s	limb.	
Dec. 2	λ Piscium	5	23 16	6 29	314	307	0 43	7 56	127	147	1 27
7	g Pleiadum	5½	6 11	13 4	240	296	7 15	14 7	133	191	1 4
7	b Pleiadum	4	6 43	13 35	187	245	Star 4′.3	south of	☽'s	limb.	

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1877.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Dec. 7	*e* Pleiadum	5	6 22	13 14	280	337	7 38	14 31	91	149	1 16
7	*c* Pleiadum	5	6 45	13 38	253	311	7 54	14 47	117	175	1 9
7	η Tauri	3	8 13	15 5	184	242	Star 7′.7	south of	☽'s	limb.	
7	*h* Pleiadum	5½	9 5	15 57	183	239	Star 5′.5	south of	☽'s	limb.	
10	ε Geminorum	3½	11 46	18 26	342	39	Star 4′.2	north of	☽'s	limb.	
11	58 Geminor.	6	2 13	8 50	175	231	Star 5′.5	south of	☽'s	limb.	
13	π^1 Cancri†	6½	2 14	8 43	258	209	3 11	9 40	68	16	0 57
13	π^2 Cancri	6	3 35	10 4	298	245	4 18	10 47	24	330	0 43

NOTES.—B. A. C., British Association Catalogue.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct* vision, and are reckoned from the *North Point* of the Moon's limb towards the West, and from its *Vertex* in the same direction, i. e. towards the right. For *inverted* image, add 180° to the angles given.

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s			
4	10	42	27.2	I.	Ec.	Dis.
	13	30		I.	Oc.	Re.
	19	42	1.2	II.	Ec.	Dis.
	23	38		II.	Oc.	Re.
5	8	0		I.	Sh.	In.
	8	33		I.	Tr.	In.
	10	19		I.	Sh.	Eg.
	10	52		I.	Tr.	Eg.
6	5	10	53.9	I.	Ec.	Dis.
	8	1		I.	Oc.	Re.
	13	50		II.	Sh.	In.
	14	58		II.	Tr.	In.
	16	44		II.	Sh.	Eg.
	17	52		II.	Tr.	Eg.
7	2	28		I.	Sh.	In.
	3	3		I.	Tr.	In.
	4	47		I.	Sh.	Eg.
	5	22		I.	Tr.	Eg.
	8	31	7.2	III.	Ec.	Dis.
	14	6		III.	Oc.	Re.
	23	39	23.4	I.	Ec.	Dis.
8	2	31		I.	Oc.	Re.
	8	59	37.5	II.	Ec.	Dis.
	13	3		II.	Oc.	Re.
	20	57		I.	Sh.	In.
	21	33		I.	Tr.	In.
	23	16		I.	Sh.	Eg.
	23	52		I.	Tr.	Eg.
9	18	7	49.3	I.	Ec.	Dis.
	21	1		I.	Oc.	Re.
10	3	7		II.	Sh.	In.
	4	22		II.	Tr.	In.
	6	1		II.	Sh.	Eg.
	7	16		II.	Tr.	Eg.
	15	25		I.	Sh.	In.
	16	3		I.	Tr.	In.
	17	44		I.	Sh.	Eg.
	18	22		I.	Tr.	Eg.
	22	30		III.	Sh.	In.
11	1	2		III.	Tr.	In.
	1	49		III.	Sh.	Eg.
	4	24		III.	Tr.	Eg.
	12	36	20.6	I.	Ec.	Dis.
	15	31		I.	Oc.	Re.
	22	17	41.7	II.	Ec.	Dis.
12	2	28		II.	Oc.	Re.
	5	16	6.9	IV.	Ec.	Dis.
	8	41	31.5	IV.	Ec.	Re.
	9	54		I.	Sh.	In.
	10	33		I.	Tr.	In.
	11	15		IV.	Oc.	Dis.
	12	13		I.	Sh.	Eg.
12	12	52		I.	Tr.	Eg.
	14	58		IV.	Oc.	Re.
13	7	4	46.5	I.	Ec.	Dis.
	10	1		I.	Oc.	Re.
	16	25		II.	Sh.	In.
	17	46		II.	Tr.	In.
	19	19		II.	Sh.	Eg.
	20	40		II.	Tr.	Eg.
14	4	23		I.	Sh.	In.
	5	3		I.	Tr.	In.
	6	41		I.	Sh.	Eg.
	7	22		I.	Tr.	Eg.
	12	29	54.1	III.	Ec.	Dis.
	18	34		III.	Oc	Re.
15	1	33	15.6	I.	Ec.	Dis.
	4	32		I.	Oc.	Re.
	11	35	13.7	II.	Ec.	Dis.
	15	52		II.	Oc.	Re.
	22	51		I.	Sh.	In.
	23	34		I.	Tr.	In.
16	1	10		I.	Sh.	Eg.
	1	53		I.	Tr.	Eg.
	20	1	40.5	I.	Ec.	Dis.
	23	2		I.	Oc.	Re.
17	5	42		II.	Sh.	In.
	7	10		II.	Tr.	In.
	8	36		II.	Sh.	Eg.
	10	4		II.	Tr.	Eg.
	17	20		I.	Sh.	In.
	18	4		I.	Tr.	In.
	19	38		I.	Sh.	Eg.
	20	23		I.	Tr.	Eg.
18	2	29		III.	Sh.	In.
	5	27		III.	Tr.	In.
	5	49		III.	Sh.	Eg.
	8	51		III.	Tr.	Eg.
	14	30	11.4	I.	Ec.	Dis.
	17	32		I.	Oc.	Re.
19	0	53	9.6	II.	Ec.	Dis.
	5	16		II.	Oc.	Re.
	11	48		I.	Sh.	In.
	12	34		I.	Tr.	In.
	14	7		I.	Sh.	Eg.
	14	53		I.	Tr.	Eg.
20	8	58	36.8	I.	Ec.	Dis.
	12	2		I.	Oc.	Re.
	14	47		IV.	Sh.	In.
	18	23		IV.	Sh.	Eg.
	19	0		II.	Sh.	In.
	20	34		II.	Tr.	In.
	21	54		II.	Sh.	Eg.
	21	57		IV.	Tr.	In.
20	23	28		II.	Tr.	Eg.
21	1	46		IV.	Tr.	Eg.
	6	17		I.	Sh.	In.
	7	4		I.	Tr.	In.
	8	35		I.	Sh.	Eg.
	9	23		I.	Tr.	Eg.
	16	28	38.8	III.	Ec.	Dis.
	23	0		III.	Oc.	Re.
22	3	27	5.3	I.	Ec.	Dis.
	6	32		I.	Oc.	Re.
	14	10	37.5	II.	Ec.	Dis.
	18	40		II.	Oc.	Re.
23	0	45		I.	Sh.	In.
	1	34		I.	Tr.	In.
	3	4		I.	Sh.	Eg.
	3	53		I.	Tr.	Eg.
	21	55	29.7	I.	Ec.	Dis.
24	1	2		I.	Oc.	Re.
	8	17		II.	Sh.	In.
	9	57		II.	Tr.	In.
	11	12		II.	Sh.	Eg.
	12	52		II.	Tr.	Eg.
	19	14		I.	Sh.	In.
	20	4		I.	Tr.	In.
	21	32		I.	Sh.	Eg.
	22	23		I.	Tr.	Eg.
25	6	28		III.	Sh.	In.
	9	49		III.	Sh.	Eg.
	9	52		III.	Tr.	In.
	13	17		III.	Tr.	Eg.
	16	24	0.1	I.	Ec.	Dis.
	19	32		I.	Oc.	Re.
26	3	28	24.8	II.	Ec.	Dis.
	8	4		II.	Oc.	Re.
	13	42		I.	Sh.	In.
	14	34		I.	Tr.	In.
	16	1		I.	Sh.	Eg.
	16	53		I.	Tr.	Eg.
27	10	52	25.0	I.	Ec.	Dis.
	14	2		I.	Oc.	Re.
	21	35		II.	Sh.	In.
	23	20		II.	Tr.	In.
28	0	30		II.	Sh.	Eg.
	2	16		II.	Tr.	Eg.
	8	10		I.	Sh.	In.
	9	4		I.	Tr.	In.
	10	29		I.	Sh.	Eg.
	11	23		I.	Tr.	Eg.
	20	27	1.0	III.	Ec.	Dis.
	23	16	8.0	IV.	Ec.	Dis.
	23	39	3.2	III.	Ec.	Re.
	23	59		III.	Oc.	Dis.

MARCH.

1	2	49	15.8	IV.	Ec.	Re.
	3	25		III.	Oc.	Re.
	5	20	53.1	I.	Ec.	Dis.
	7	31		IV.	Oc.	Dis.
	8	32		I.	Oc.	Re.
	11	26		IV.	Oc.	Re.
	16	45	48.6	II.	Ec.	Dis.
	21	27		II.	Oc.	Re.
2	2	39		I.	Sh.	In.
	3	34		I.	Tr.	In.
2	4	58		I.	Sh.	Eg.
	5	53		I.	Tr.	Eg.
	23	49	16.8	I.	Ec.	Dis.
3	3	2		I.	Oc.	Re.
	10	52		II.	Sh.	In.
	12	44		II.	Tr.	In.
	13	47		II.	Sh.	Eg.
	15	39		II.	Tr.	Eg.
	21	7		I.	Sh.	In.
	22	3		I.	Tr.	In.
3	23	26		I.	Sh.	Eg.
4	0	23		I.	Tr.	Eg.
	10	28		III.	Sh.	In.
	13	49		III.	Sh.	Eg.
	14	15		III.	Tr.	In.
	17	41		III.	Tr.	Eg.
	18	17	46.8	I.	Ec.	Dis.
	21	32		I.	Oc.	Re.
5	6	3	27.9	II.	Ec.	Dis.
	10	50		II.	Oc.	Re.

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington.
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

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MARCH.

d	h	m	s			
5	15	36		I.	Sh.	In.
	16	33		I.	Tr.	In.
	17	55		I.	Sh.	Eg.
	18	52		I.	Tr.	Eg.
6	12	46	11.0	I.	Ec.	Dis.
	16	1		I.	Oc.	Re.
7	0	10		II.	Sh.	In.
	2	7		II.	Tr.	In.
	3	5		II.	Sh.	Eg.
	5	2		II.	Tr.	Eg.
	10	4		I.	Sh.	In.
	11	3		I.	Tr.	In.
	12	23		I.	Sh.	Eg.
	13	22		I.	Tr.	Eg.
8	0	25	23.0	III.	Ec.	Dis.
	3	38	16.2	III.	Ec.	Re.
	4	20		III.	Oc.	Dis.
	7	14	38.8	I.	Ec.	Dis.
	7	48		III.	Oc.	Re.
	10	31		I.	Oc.	Re.
	19	20	47.2	II.	Ec.	Dis.
9	0	13		II.	Oc.	Re.
	4	33		I.	Sh.	In.
	5	33		I.	Tr.	In.
	6	52		I.	Sh.	Eg.
	7	52		I.	Tr.	Eg.
	8	49		IV.	Sh.	In.
	12	32		IV.	Sh.	Eg.
	18	2		IV.	Tr.	In.
	22	5		IV.	Tr.	Eg.
10	1	43	1.8	I.	Ec.	Dis.
	5	1		I.	Oc.	Re.
	13	27		II.	Sh.	In.
	15	30		II.	Tr.	In.
	16	22		II.	Sh.	Eg.
	18	25		II.	Tr.	Eg.
	23	2		I.	Sh.	In.
11	0	3		I.	Tr.	In.
	1	20		I.	Sh.	Eg.
	2	22		I.	Tr.	Eg.
	14	26		III.	Sh.	In.
	17	48		III.	Sh.	Eg.
	18	35		III.	Tr.	In.
	20	11	31.4	I.	Ec.	Dis.
	22	2		III.	Tr.	Eg.
	23	31		I.	Oc.	Re.
12	8	38	18.4	II.	Ec.	Dis.
	13	36		II.	Oc.	Re.
	17	30		I.	Sh.	In.
	18	33		I.	Tr.	In.
	19	48		I.	Sh.	Eg.
	20	51		I.	Tr.	Eg.
13	14	39	55.3	I.	Ec.	Dis.
	18	0		I.	Oc.	Re.
14	2	45		II.	Sh.	In.
	4	53		II.	Tr.	In.
	5	40		II.	Sh.	Eg.
	7	48		II.	Tr.	Eg.
14	11	59		I.	Sh.	In.
	13	2		I.	Tr.	In.
	14	17		I.	Sh.	Eg.
	15	21		I.	Tr.	Eg.
15	4	24	8.7	III.	Ec.	Dis.
	7	37	52.1	III.	Ec.	Re.
	8	38		III.	Oc.	Dis.
	9	8	23.5	I.	Ec.	Dis.
	12	7		III.	Oc.	Re.
	12	30		I.	Oc.	Re.
	21	55	33.7	II.	Ec.	Dis.
16	2	58		II.	Oc.	Re.
	6	27		I.	Sh.	In.
	7	32		I.	Tr.	In.
	8	45		I.	Sh.	Eg.
	9	51		I.	Tr.	Eg.
17	3	36	46.0	I.	Ec.	Dis.
	7	0		I.	Oc.	Re.
	16	3		II.	Sh.	In.
	17	16	5.2	IV.	Ec.	Dis.*
	18	15		II.	Tr.	In.
	18	58		II.	Sh.	Eg.
	20	56	23.6	IV.	Ec.	Re.
	21	10		II.	Tr.	Eg.
18	0	55		I.	Sh.	In.
	2	2		I.	Tr.	In.
	3	13		I.	Sh.	Eg.
	3	23		IV.	Oc.	Dis.
	4	21		I.	Tr.	Eg.
	7	30		IV.	Oc.	Re.
	18	24		III.	Sh.	In.
	21	47		III.	Sh.	Eg.
	22	5	15.4	I.	Ec.	Dis.
	22	52		III.	Tr.	In.
19	1	29		I.	Oc.	Re.
	2	21		III.	Tr.	Eg.
	11	12	57.9	II.	Ec.	Dis.
	16	19		II.	Oc	Re.*
	19	23		I.	Sh.	In.
	20	31		I.	Tr.	In.
	21	42		I.	Sh.	Eg.
	22	50		I.	Tr.	Eg.
20	16	33	39.2	I.	Ec.	Dis.*
	19	59		I.	Oc.	Re.
21	5	20		II.	Sh.	In.
	7	39		II.	Tr.	In.
	8	16		II.	Sh.	Eg.
	10	32		II.	Tr.	Eg.
	13	52		I.	Sh.	In.
	15	1		I.	Tr.	In.
	16	10		I.	Sh.	Eg.
	17	20		I.	Tr.	Eg.
22	8	22	49.5	III.	Ec.	Dis.
	11	2	6.9	I.	Ec.	Dis.
	11	37	22.5	III.	Ec.	Re.
	12	55		III.	Oc.	Dis.
	14	28		I.	Oc.	Re.
	16	25		III.	Oc.	Re.*
23	0	30	9.5	II.	Ec.	Dis.
	5	41		II.	Oc.	Re.
	8	20		I.	Sh.	In.
	9	30		I.	Tr.	In.
	10	38		I.	Sh.	Eg.
	11	50		I.	Tr.	Eg.
24	5	30	29.5	I.	Ec.	Dis.
	8	58		I.	Oc.	Re.
	18	38		II.	Sh.	In.
	20	59		II.	Tr.	In.
	21	34		II.	Sh.	Eg.
	23	54		II.	Tr.	Eg.
25	2	48		I.	Sh.	In.
	3	59		I.	Tr.	In.
	5	7		I.	Sh.	Eg.
	6	19		I.	Tr.	Eg.
	22	22		III.	Sh.	In.
	23	58	58.8	I.	Ec.	Dis
26	1	47		III.	Sh.	Eg.
	2	51		IV.	Sh.	In.
	3	7		III.	Tr.	In.
	3	27		I.	Oc.	Re.
	6	37		III.	Tr.	Eg.
	6	42		IV.	Sh.	Eg.
	13	42		IV.	Tr.	In.
	13	47	27.0	II.	Ec.	Dis.
	17	54		IV.	Tr.	Eg.
	19	2		II.	Oc.	Re.
	21	17		I.	Sh.	In.
	22	28		I.	Tr.	In.
	23	35		I.	Sh.	Eg.
27	0	48		I.	Tr.	Eg.
	18	27	22.3	I.	Ec.	Dis.
	21	56		I.	Oc.	Re.
28	7	56		II.	Sh.	In.
	10	21		II.	Tr.	In.
	10	52		II.	Sh.	Eg.
	13	16		II.	Tr.	Eg.
	15	45		I.	Sh.	In.
	16	57		I.	Tr.	In.*
	18	3		I.	Sh.	Eg.
	19	17		I.	Tr.	Eg.
29	12	22	5.4	III.	Ec.	Dis.
	12	55	50.1	I.	Ec.	Dis.
	15	37	27.0	III.	Ec.	Re.
	16	26		I.	Oc.	Re.*
	17	9		III.	Oc.	Dis.
	20	41		III.	Oc.	Re.
30	3	4	35.4	II.	Ec.	Dis.
	8	23		II.	Oc.	Re.
	10	13		I.	Sh.	In.
	11	26		I.	Tr.	In.
	12	32		I.	Sh.	Eg.
	13	46		I.	Tr.	Eg.
31	7	24	12.2	I.	Ec.	Dis.
	10	55		I.	Oc.	Re.
	21	14		II.	Sh.	In.
	23	42		II.	Tr.	In.

APRIL.

d	h	m	s			
1	0	10		II.	Sh.	Eg.
	2	37		II.	Tr.	Eg.
	4	41		I.	Sh.	In.
	5	55		I.	Tr.	In.
1	7	0		I.	Sh.	Eg.
	8	15		I.	Tr.	Eg.
2	1	52	41.5	I.	Ec.	Dis.
	2	21		III.	Sh.	In.
2	5	24		I.	Oc.	Re.
	5	42		III.	Sh.	Eg.
	7	19		III.	Tr.	In.
	10	50		III.	Tr.	Eg.

In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance. *Visible at Washington.

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APRIL.

d	h	m	s				d	h	m	s				d	h	m	s			
2	16	21	46.6	II.	Ec.	Dis.*	**11**	23	9		I.	Tr.	Eg.	**21**	13	5	22.7	I.	Ec.	Dis.
	21	43		II.	Oc.	Re.	**12**	0	52		IV.	Sh.	Eg.		16	43		I.	Oc.	Re.
	23	10		I.	Sh.	In.		8	45		IV.	Tr.	In.	**22**	5	3		II.	Sh.	In.
3	0	24		I.	Tr.	In.		13	6		IV.	Tr.	Eg.		7	40		II.	Tr.	In.
	1	28		I.	Sh.	Eg.		16	43	16.7	I.	Ec.	Dis.*		7	58		II.	Sh.	Eg.
	2	44		I.	Tr.	Eg.		20	19		I.	Oc.	Re.		10	21		I.	Sh.	In.
	11	16	1.6	IV.	Ec.	Dis.		20	19	22.5	III.	Ec.	Dis.		10	36		II.	Tr.	Eg.
	15	3	5.6	IV.	Ec.	Re.		23	36	18.5	III.	Ec.	Re.		11	42		I.	Tr.	In.
	20	21	5.3	I.	Ec.	Dis.	**13**	1	28		III.	Oc.	Dis.		12	41		I.	Sh.	Eg.
	22	43		IV.	Oc.	Dis.		5	1		III.	Oc.	Re.		14	2		I.	Tr.	Eg.
	23	53		I.	Oc.	Re.		8	12	59.0	II.	Ec.	Dis.	**23**	7	33	52.4	I.	Ec.	Dis
4	3	0		IV.	Oc.	Re.		13	41		II.	Oc.	Re.		11	11		I.	Oc.	Re.
	10	32		II.	Sh.	In.		14	0		I.	Sh.	In.		14	17		III.	Sh.	In.*
	13	2		II.	Tr.	In.		15	18		I.	Tr.	In.*		17	44		III.	Sh.	Eg.
	13	28		II.	Sh.	Eg.		16	20		I.	Sh.	Eg.*		19	36		III.	Tr.	In.
	15	58		II.	Tr.	Eg.*		17	38		I.	Tr.	Eg.		23	11		III.	Tr.	Eg.
	17	38		I.	Sh.	In.	**14**	11	11	38.8	I.	Ec.	Dis.	**24**	0	3	57.0	II.	Ec.	Dis.
	18	53		I.	Tr.	In.		14	47		I.	Oc.	Re.*		4	50		I.	Sh.	In.
	19	57		I.	Sh.	Eg.	**15**	2	27		II.	Sh.	In.		5	35		II.	Oc.	Re.
	21	13		I.	Tr.	Eg.		5	2		II.	Tr.	In.		6	10		I.	Tr.	In.
5	14	49	33.3	I.	Ec.	Dis.		5	22		II.	Sh.	Eg.		7	10		I.	Sh.	Eg.
	16	20	44.2	III.	Ec.	Dis.*		7	58		II.	Tr.	Eg.		8	30		I.	Tr.	Eg.
	18	23		I.	Oc.	Re.		8	28		I.	Sh.	In.	**25**	2	2	16.5	I.	Ec.	Dis.
	19	36	53.4	III.	Ec.	Re.		9	47		I.	Tr.	In.		5	40		I.	Oc.	Re.
	21	20		III.	Oc.	Dis.		10	48		I.	Sh.	Eg.		18	21		II.	Sh.	In.
6	0	52		III.	Oc.	Re.		12	7		I.	Tr.	Eg.		20	59		II.	Tr.	In.
	5	38	51.4	II.	Ec.	Dis.	**16**	5	40	8.1	I.	Ec.	Dis.		21	16		II.	Sh.	Eg.
	11	2		II.	Oc.	Re.		9	16		I.	Oc.	Re.		23	18		I.	Sh.	In.
	12	6		I.	Sh.	In.		10	18		III.	Sh.	In.		23	55		II.	Tr.	Eg.
	13	22		I.	Tr.	In.		13	44		III.	Sh.	Eg.	**26**	0	39		I.	Tr.	In.
	14	25		I.	Sh.	Eg.		15	34		III.	Tr.	In.*		1	38		I.	Sh.	Eg
	15	42		I.	Tr.	Eg.*		19	7		III.	Tr.	Eg.		2	58		I.	Tr.	Eg
7	9	17	55.3	I.	Ec.	Dis.		21	30	0.4	II.	Ec.	Dis.		20	30	45.5	I.	Ec.	Dis.
	12	52		I.	Oc.	Re.	**17**	2	56		I.	Sh.	In.	**27**	0	8		I.	Oc.	Re.
	23	50		II.	Sh.	In.		2	59		II.	Oc.	Re.		4	16	8.5	III.	Ec.	Dis.
8	2	22		II.	Tr.	In.		4	16		I.	Tr.	In.		7	34	34.9	III.	Ec.	Re.
	2	46		II.	Sh.	Eg.		5	16		I.	Sh.	Eg.		9	32		III.	Oc.	Dis.
	5	18		II.	Tr.	Eg.		6	36		I.	Tr.	Eg.		13	7		III.	Oc.	Re.
	6	35		I.	Sh.	In.	**18**	0	8	31.9	I.	Ec.	Dis.		13	20	53.6	II.	Ec.	Dis.
	7	51		I.	Tr.	In.		3	45		I.	Oc.	Re.		17	46		I.	Sh.	In.
	8	54		I.	Sh.	Eg.		15	45		II.	Sh.	In.*		18	52		II.	Oc.	Re.
	10	11		I.	Tr.	Eg.		18	21		II.	Tr.	In.		19	7		I.	Tr.	In.
9	3	46	24.8	I.	Ec.	Dis.		18	40		II.	Sh.	Eg.		20	6		I.	Sh.	Eg.
	6	19		III.	Sh.	In.		21	17		II.	Tr.	Eg.		21	27		I.	Tr.	Eg.
	7	21		I.	Oc.	Re.		21	25		I.	Sh.	In.	**28**	14	56		IV.	Sh.	In.*
	9	45		III.	Sh.	Eg.		22	45		I.	Tr.	In.		14	59	7.9	I.	Ec.	Dis.*
	11	28		III.	Tr.	In.		23	45		I.	Sh.	Eg.		18	37		I.	Oc.	Re.
	15	1		III.	Tr.	Eg.	**19**	1	5		I.	Tr.	Eg.		19	1		IV.	Sh.	Eg.
	18	55	57.3	II.	Ec.	Dis.		18	37	0.5	I.	Ec.	Dis.	**29**	3	4		IV.	Tr.	In.
10	0	22		II.	Oc.	Re.		22	14		I.	Oc.	Re.		7	32		IV.	Tr.	Eg.
	1	3		I.	Sh.	In.	**20**	0	17	44.1	III.	Ec.	Dis.		7	39		II.	Sh.	In.
	2	20		I.	Tr.	In.		3	35	25.7	III.	Ec.	Re.		10	17		II.	Tr.	In.
	3	23		I.	Sh.	Eg.		5	16	39.4	IV.	Ec.	Dis.		10	35		II.	Sh.	Eg.
	4	40		I.	Tr.	Eg.		5	32		III.	Oc.	Dis.		12	15		I.	Sh.	In.
	22	14	48.4	I.	Ec.	Dis.		9	6		III.	Oc.	Re.		13	13		II.	Tr.	Eg.
11	1	50		I.	Oc.	Re.		9	10	4.0	IV.	Ec.	Re.		13	35		I.	Tr.	In.
	13	8		II.	Sh.	In.		10	46	59.4	II.	Ec.	Dis.		14	35		I.	Sh.	Eg.*
	15	42		II.	Tr.	In.*		15	53		I.	Sh.	In.*		15	55		I.	Tr.	Eg.*
	16	4		II.	Sh.	Eg.*		16	17		II.	Oc.	Re.*	**30**	9	27	38.1	I.	Ec.	Dis.
	18	38		II.	Tr.	Eg.		17	13		I.	Tr.	In.		13	5		I.	Oc.	Re.
	19	31		I.	Sh.	In.		17	24		IV.	Oc.	Dis.		18	16		III.	Sh.	In.
	20	49		I.	Tr.	In.		18	13		I.	Sh.	Eg.		21	43		III.	Sh.	Eg.
	20	54		IV.	Sh.	In.		19	33		I.	Tr.	Eg.		23	34		III.	Tr.	In.
	21	51		I.	Sh.	Eg.		21	49		IV.	Oc.	Re.							

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington.
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

WASHINGTON MEAN TIME.

MAY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	2	37	48.2	II.	Ec.	Dis.	**10**	6	43		I.	Tr.	Eg.	**20**	17	54		II.	Tr.	In.
	3	9		III.	Tr.	Eg.	**11**	0	18	21.5	I.	Ec.	Dis.		17	55		I.	Sh.	In.
	6	43		I.	Sh.	In.		3	54		I.	Oc.	Re.		18	24		II.	Sh.	Eg.
	8	3		I.	Tr.	In.		12	13	54.5	III.	Ec.	Dis.		19	9		I.	Tr.	In.
	8	8		II.	Oc.	Re.		15	33	47.1	III.	Ec.	Re.*		20	15		I.	Sh.	Eg.
	9	3		I.	Sh.	Eg.		17	20		III.	Oc.	Dis.		20	50		II.	Tr.	Eg.
	10	23		I.	Tr.	Eg.		18	28	28.7	II.	Ec.	Dis.		21	29		I.	Tr.	Eg.
2	3	56	2.6	I.	Ec.	Dis.		20	56		III.	Oc.	Re.	**21**	15	9	9.9	I.	Ec.	Dis.*
	7	33		I.	Oc.	Re.		21	33		I.	Sh.	In.		18	40		I.	Oc.	Re.
	20	57		II.	Sh.	In.		22	51		I.	Tr.	In.	**22**	6	11		III.	Sh.	In.
	23	34		II.	Tr.	In.		23	53		I.	Sh.	Eg.		9	40		III.	Sh.	Eg.
	23	53		II.	Sh.	Eg.		23	54		II.	Oc.	Re.		10	19	4.0	II.	Ec.	Dis
3	1	11		I.	Sh.	In.	**12**	1	11		I.	Tr.	Eg.		11	3		III.	Tr.	In.
	2	30		II.	Tr.	Eg.		18	46	44.9	I.	Ec.	Dis.		12	23		I.	Sh.	In.
	2	31		I.	Tr.	In.		22	22		I.	Oc.	Re.		13	36		I.	Tr.	In.*
	3	31		I.	Sh.	Eg.	**13**	12	52		II.	Sh.	In.		14	39		III.	Tr.	Eg.*
	4	51		I.	Tr.	Eg.		15	24		II.	Tr.	In.*		14	43		I.	Sh.	Eg.*
	22	24	32.4	I.	Ec.	Dis.		15	48		II.	Sh.	Eg.*		15	36		II.	Oc.	Re.*
4	2	2		I.	Oc.	Re.		16	1		I.	Sh.	In.*		15	56		I.	Tr.	Eg.*
	8	15	2.9	III.	Ec.	Dis.		17	19		I.	Tr.	In.	**23**	9	37	36.6	I.	Ec.	Dis.
	11	34	12.9	III.	Ec.	Re.		18	20		II.	Tr.	Eg.		13	8		I.	Oc.	Re.*
	13	28		III.	Oc.	Dis.		18	21		I.	Sh.	Eg.		17	18	55.9	IV.	Ec.	Dis.
	15	54	43.0	II.	Ec.	Dis.*		19	39		I.	Tr.	Eg.		21	23	23.5	IV.	Ec.	Re.
	17	3		III.	Oc.	Re.	**14**	13	15	16.3	I.	Ec.	Dis.*	**24**	4	17		IV.	Oc.	Dis.
	19	40		I.	Sh.	In.		16	50		I.	Oc.	Re.		4	47		II.	Sh.	In.
	20	59		I.	Tr.	In.	**15**	2	12		III.	Sh.	In.		6	51		I.	Sh.	In.
	21	24		II.	Oc.	Re.		5	41		III.	Sh.	Eg.		7	9		II.	Tr.	In.
	22	0		I.	Sh.	Eg.		7	18		III.	Tr.	In.		7	42		II.	Sh.	Eg.
	23	19		I.	Tr.	Eg.		7	45	20.0	II.	Ec.	Dis.		8	4		I.	Tr.	In.
5	16	52	55.2	I.	Ec.	Dis.		9	0		IV.	Sh.	In.		8	52		IV.	Oc.	Re.
	20	30		I.	Oc.	Re.		10	30		I.	Sh.	In.		9	11		I.	Sh.	Eg.
6	10	15		II.	Sh.	In.		10	54		III.	Tr.	Eg.		10	5		II.	Tr.	Eg.
	12	51		II.	Tr.	In.		11	46		I.	Tr.	In.		10	24		I.	Tr.	Eg.
	13	11		II.	Sh.	Eg.		12	50		I.	Sh.	Eg	**25**	4	6	8.9	I.	Ec.	Dis.
	14	8		I.	Sh.	In.*		13	9		II.	Oc.	Re.*		7	35		I.	Oc.	Re.
	15	27		I.	Tr.	In.*		13	10		IV.	Sh.	Eg.*		20	12	19.8	III.	Ec.	Dis.
	15	47		II.	Tr.	Eg.*		14	6		I.	Tr.	Eg.*		23	33	34.6	III.	Ec.	Re.
	16	28		I.	Sh.	Eg.		20	33		IV.	Tr.	In.		23	35	56.7	II.	Ec.	Dis.
	17	47		I.	Tr.	Eg.	**16**	1	6		IV.	Tr.	Eg.	**26**	0	52		III.	Oc.	Dis.
	23	17	28.4	IV.	Ec.	Dis.		7	43	42.3	I.	Ec.	Dis.		1	20		I.	Sh.	In.
7	3	16	45.6	IV.	Ec.	Re.		11	17		I.	Oc.	Re.		2	31		I.	Tr.	In.
	11	17		IV.	Oc.	Dis.	**17**	2	10		II.	Sh.	In.		3	40		I.	Sh.	Eg.
	11	21	26.0	I.	Ec.	Dis.		4	39		II.	Tr.	In.		4	29		III.	Oc.	Re.
	14	58		I.	Oc.	Re.*		4	58		I.	Sh.	In.		4	49		II.	Oc.	Re.
	15	48		IV.	Oc.	Re.*		5	6		II.	Sh.	Eg.		4	51		I.	Tr.	Eg.
	22	14		III.	Sh.	In.		6	14		I.	Tr.	In.		22	34	33.9	I.	Ec.	Dis.
8	1	42		III.	Sh.	Eg.		7	18		I.	Sh.	Eg.	**27**	2	3		I.	Oc.	Re.
	3	28		III.	Tr.	In.		7	35		II.	Tr.	Eg.		18	6		II.	Sh.	In.
	5	11	35.2	II.	Ec.	Dis.		8	34		I.	Tr.	Eg.		19	48		I.	Sh.	In.
	7	4		III.	Tr.	Eg.	**18**	2	12	13.5	I.	Ec.	Dis.		20	23		II.	Tr.	In.
	8	36		I.	Sh.	In.		5	45		I.	Oc.	Re.		20	58		I.	Tr.	In.
	9	55		I.	Tr.	In.		16	13	23.9	III.	Ec.	Dis.		21	1		II.	Sh.	Eg.
	10	40		II.	Oc.	Re.		19	33	58.1	III.	Ec.	Re.		22	8		I.	Sh.	Eg.
	10	56		I.	Sh.	Eg.		21	2	12.7	II.	Ec.	Dis.		23	18		I.	Tr.	Eg.
	12	15		I.	Tr.	Eg.		21	9		III.	Oc.	Dis.		23	19		II.	Tr.	Eg.
9	5	49	51.2	I.	Ec.	Dis.		23	26		I.	Sh.	In.	**28**	17	3	7.0	I.	Ec.	Dis.
	9	26		I.	Oc.	Re.	**19**	0	41		I.	Tr.	In.		20	30		I.	Oc.	Re.
	23	33		II.	Sh.	In.		0	45		III.	Oc.	Re.	**29**	10	9		III.	Sh.	In.
10	2	8		II.	Tr.	In.		1	46		I.	Sh.	Eg.		12	52	48.9	II.	Ec.	Dis.*
	2	29		II.	Sh.	Eg.		2	23		II.	Oc.	Re.		13	40		III.	Sh.	Eg.*
	3	5		I.	Sh.	In.		3	1		I.	Tr.	Eg.		14	16		I.	Sh.	In.*
	4	23		I.	Tr.	In.		20	40	37.7	I.	Ec.	Dis.		14	43		III.	Tr.	In.*
	5	4		II.	Tr.	Eg.	**20**	0	13		I.	Oc.	Re.		15	25		I.	Tr.	In.*
	5	25		I.	Sh.	Eg.		15	29		II.	Sh.	In.*		16	36		I.	Sh.	Eg.

In., denotes ingress; Eg., egress: Dis., disappearance; Re., reappearance. * Visible at Washington.

WASHINGTON MEAN TIME.

d	h	m	s				d	h	m	s				d	h	m	s			
MAY.																				
29	17	45		I.	Tr.	Eg.	**31**	7	24		II.	Sh.	In.	**31**	10	19		II.	Sh.	Eg.
	18	1		II.	Oc.	Re.		8	45		I.	Sh.	In.		11	5		I.	Sh.	Eg.
	18	20		III.	Tr.	Eg.		9	36		II.	Tr.	In.		12	12		I.	Tr.	Eg.*
30	11	31	34.7	I.	Ec.	Dis.		9	52		I.	Tr.	In.		12	32		II.	Tr.	Eg.*
	14	57		I.	Oc.	Re.*														
JUNE.																				
1	3	4		IV.	Sh.	In.	**9**	8	27		I.	Tr.	Eg.	**18**	2	19		I.	Tr.	In.
	6	0	8.3	I.	Ec.	Dis.		9	34		II.	Oc.	Re.		3	35		II.	Tr.	In.
	7	20		IV.	Sh.	Eg.		11	20	51.1	IV.	Ec.	Dis.*		3	48		I.	Sh.	Eg.
	9	25		I.	Oc.	Re.		11	42		III.	Oc.	Re.*		4	39		I.	Tr.	Eg.
	13	7		IV.	Tr.	In.*		15	30	48.3	IV.	Ec.	Re.*		4	45		IV.	Tr.	In.
	17	43		IV.	Tr.	Eg.		20	20		IV.	Oc.	Dis.		4	52		II.	Sh.	Eg.
2	0	11	18.4	III.	Ec.	Dis.	**10**	0	58		IV.	Oc.	Re.		6	32		II.	Tr.	Eg.
	2	9	42.2	II.	Ec.	Dis.		2	22	39.0	I.	Ec.	Dis.		9	24		IV.	Tr.	Eg.
	3	13		I.	Sh.	In.		5	39		I.	Oc.	Re.		22	45	25.5	I.	Ec.	Dis.
	3	23	12.8	III.	Ec.	Re.		23	19		II.	Sh.	In.	**19**	1	53		I.	Oc.	Re.
	4	19		I.	Tr.	In.		23	35		I.	Sh.	In.		19	57		I.	Sh.	In.
	4	31		III.	Oc.	Dis.	**11**	0	33		I.	Tr.	In.		20	34	22.1	II.	Ec.	Dis.
	5	33		I.	Sh.	Eg.		1	13		II.	Tr.	In.		20	45		I.	Tr.	In.
	6	39		I.	Tr.	Eg.		1	55		I.	Sh.	Eg.		22	7		III.	Sh.	In.
	7	13		II.	Oc.	Re.		2	15		II.	Sh.	Eg.		22	16		I.	Sh.	Eg.
	8	8		III.	Oc.	Re.		2	53		I.	Tr.	Eg.		23	5		I.	Tr.	Eg.
3	0	28	34.3	I.	Ec.	Dis.		4	10		II.	Tr.	Eg.	**20**	1	3		II.	Oc.	Re.
	3	52		I.	Oc.	Re.		20	51	14.2	I.	Ec.	Dis.		1	19		III.	Tr.	In.
	20	42		II.	Sh.	In.	**12**	0	6		I.	Oc.	Re.		1	39		III.	Sh.	Eg.
	21	41		I.	Sh.	In.		18	0	25.9	II.	Ec.	Dis.		4	57		III.	Tr.	Eg.
	22	46		I.	Tr.	In.		18	3		I.	Sh.	In.		17	13	56.8	I.	Ec.	Dis
	22	49		II.	Tr.	In.		18	8		III.	Sh.	In.		20	19		I.	Oc.	Re.
	23	38		II.	Sh.	Eg.		18	59		I.	Tr.	In.	**21**	14	25		I.	Sh.	In.*
4	0	1		I.	Sh.	Eg.		20	23		I.	Sh.	Eg.		15	12		I.	Tr.	In.*
	1	6		I.	Tr.	Eg.		21	19		I.	Tr.	Eg.		15	14		II.	Sh.	In.*
	1	45		II.	Tr.	Eg.		21	39		III.	Sh.	Eg.		16	45		I.	Sh.	Eg.
	18	57	8.4	I.	Ec.	Dis.		21	52		III.	Tr.	In.		16	46		II.	Tr.	In.
	22	19		I.	Oc.	Re.		22	44		II.	Oc.	Re.		17	32		I.	Tr.	Eg.
5	14	8		III.	Sh.	In.*	**13**	1	29		III.	Tr.	Eg.		18	10		II.	Sh.	Eg
	15	26	35.5	II.	Ec.	Dis.*		15	19	44.2	I.	Ec.	Dis.*		19	43		II.	Tr.	Eg.
	16	10		I.	Sh.	In.		18	33		I.	Oc.	Re.	**22**	11	42	34.4	I.	Ec.	Dis.*
	17	13		I.	Tr.	In.	**14**	12	31		I.	Sh.	In.*		14	46		I.	Oc.	Re.*
	17	39		III.	Sh.	Eg.		12	37		II.	Sh.	In.*	**23**	8	54		I.	Sh.	In.
	18	19		III.	Tr.	In.		13	26		I.	Tr.	In.*		9	38		I.	Tr.	In.
	18	30		I.	Sh.	Eg.		14	24		II.	Tr.	In.*		9	51	21.9	II.	Ec.	Dis.
	19	33		I.	Tr.	Eg.		14	51		I.	Sh.	Eg.*		11	13		I.	Sh.	Eg.*
	20	24		II.	Oc.	Re.		15	33		II.	Sh.	Eg.*		11	58		I.	Tr.	Eg.*
	21	56		III.	Tr.	Eg.		15	46		I.	Tr.	Eg.*		12	8	33.3	III.	Ec.	Dis.*
6	13	25	37.0	I.	Ec.	Dis.*		17	21		II.	Tr.	Eg.		14	12		II.	Oc.	Re.*
	16	46		I.	Oc.	Re.	**15**	9	48	20.3	I.	Ec.	Dis.		18	38		III.	Oc.	Re.
7	10	0		II.	Sh.	In.		13	0		I.	Oc.	Re.*	**24**	6	11	4.3	I.	Ec.	Dis.
	10	38		I.	Sh.	In.	**16**	7	0		I.	Sh.	In.		9	12		I.	Oc.	Re.
	11	40		I.	Tr.	In.*		7	17	22.7	II.	Ec.	Dis.	**25**	3	22		I.	Sh.	In.
	12	1		II.	Tr.	In.*		7	52		I.	Tr.	In.		4	4		I.	Tr.	In.
	12	56		II.	Sh.	Eg.*		8	9	2.1	III.	Ec.	Dis.		4	33		II.	Sh.	In.
	12	58		I.	Sh.	Eg.*		9	20		I.	Sh.	Eg.		5	41		I.	Sh.	Eg.
	14	0		I.	Tr.	Eg.*		10	12		I.	Tr.	Eg.		5	56		II.	Tr.	In.
	14	58		II.	Tr.	Eg.*		11	32	12.7	III.	Ec.	Re.*		6	24		I.	Tr.	Eg.
8	7	54	11.7	I.	Ec.	Dis.		11	34		III.	Oc.	Dis.*		7	29		II.	Sh.	Eg.
	11	13		I.	Oc.	Re.		11	54		II.	Oc.	Re.*		8	53		II.	Tr.	Eg.
9	4	10	5.6	III.	Ec.	Dis.		15	12		III.	Oc.	Re.*	**26**	0	39	42.2	I.	Ec.	Dis.
	4	43	30.1	II.	Ec.	Dis.	**17**	4	16	48.8	I.	Ec.	Dis.		3	39		I.	Oc.	Re.
	5	6		I.	Sh.	In.		7	26		I.	Oc.	Re.		5	23	42.0	IV.	Ec.	Dis.
	6	7		I.	Tr.	In.		21	8		IV.	Sh.	In.		9	38	24.8	IV.	Ec.	Re.
	7	26		I.	Sh.	Eg.	**18**	1	28		I.	Sh.	In.		11	29		IV.	Oc.	Dis.*
	7	32	38.6	III.	Ec.	Re.		1	30		IV.	Sh.	Eg.		16	9		IV.	Oc.	Re.
	8	4		III.	Oc.	Dis.		1	56		II.	Sh.	In.		21	50		I.	Sh.	In.

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington,
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s				d	h	m	s				d	h	m	s			
26	22	30		I.	Tr.	In.	**27**	22	5		I.	Oc.	Re.	**29**	16	31		I.	Oc.	Re.
	23	8	25.4	II.	Ec.	Dis.	**28**	16	19		I.	Sh.	In.	**30**	10	47		I.	Sh.	In.*
27	0	10		I.	Sh.	Eg.		16	56		I.	Tr.	In.		11	23		I.	Tr.	In.*
	0	50		I.	Tr.	Eg.		17	51		II.	Sh.	In.		12	25	19.3	II.	Ec.	Dis.*
	2	6		III.	Sh.	In.		18	38		I.	Sh.	Eg.		13	7		I.	Sh.	Eg.*
	3	20		II.	Oc.	Re.		19	6		II.	Tr.	In.		13	43		I.	Tr.	Eg.*
	4	43		III.	Tr.	In.		19	17		I.	Tr.	Eg.		16	8	4.4	III.	Ec.	Dis.
	5	39		III.	Sh.	Eg.		20	47		II.	Sh.	Eg.		16	28		II.	Oc.	Re.
	8	21		III.	Tr.	Eg.		22	2		II.	Tr.	Eg.		22	0		III.	Oc.	Re.
	19	8	15.0	I.	Ec.	Dis.	**29**	13	36	54.2	I.	Ec.	Dis.*							

JULY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	8	5	25.6	I.	Ec.	Dis.	**9**	9	53		I.	Tr.	Eg.*	**18**	5	52		I.	Sh.	Eg.
	10	58		I.	Oc.	Re.*		10	33		II.	Tr.	In.*		6	2		I.	Tr.	Eg.
2	5	15		I.	Sh.	In.		12	44		II.	Sh.	Eg.*		6	51	30.9	II.	Ec.	Dis.
	5	49		I.	Tr.	In.		13	29		II.	Tr.	Eg.*		10	4		II.	Oc.	Re.*
	7	10		II.	Sh.	In.	**10**	4	28	33.9	I.	Ec.	Dis.		14	3		III.	Sh.	In.*
	7	35		I.	Sh.	Eg.		7	8		I.	Oc.	Re.		14	39		III.	Tr.	In.*
	8	9		I.	Tr.	Eg.	**11**	1	37		I.	Sh.	In.		17	38		III.	Sh.	Eg.
	8	15		II.	Tr.	In.		1	59		I.	Tr.	In.		18	16		III.	Tr.	Eg.
	10	6		II.	Sh.	Eg.*		3	57		I.	Sh.	Eg.	**19**	0	51	47.7	I.	Ec.	Dis.
	11	11		II.	Tr.	Eg.*		4	16	58.3	II.	Ec.	Dis.		3	18		I.	Oc.	Re.
3	2	34	4.9	I.	Ec.	Dis.		4	19		I.	Tr.	Eg.		22	0		I.	Sh.	In.
	5	24		I.	Oc.	Re.		7	50		II.	Oc.	Re.		22	8		I.	Tr.	In.
	23	44		I.	Sh.	In.		10	4		III.	Sh.	In.*	**20**	0	20		I.	Sh.	Eg.
4	0	15		I.	Tr.	In.		11	22		III.	Tr.	In.*		0	28		I.	Tr.	Eg.
	1	42	37.2	II.	Ec.	Dis.		13	38		III.	Sh.	Eg.*		1	43		II.	Sh.	In.
	2	4		I.	Sh.	Eg.		14	59		III.	Tr.	Eg.*		1	57		II.	Tr.	In.
	2	35		I.	Tr.	Eg.		22	57	10.0	I.	Ec.	Dis.		4	40		II.	Sh.	Eg.
	5	35		II.	Oc.	Re.	**12**	1	34		I.	Oc.	Re.		4	54		II.	Tr.	Eg
	6	4		III.	Sh.	In.		20	6		I.	Sh.	In.		19	20	31.8	I.	Ec.	Dis.
	8	3		III.	Tr.	In.		20	25		I.	Tr.	In.		21	44		I.	Oc.	Re.
	9	38		III.	Sh.	Eg.*		22	26		I.	Sh.	Eg.	**21**	9	20		IV.	Sh.	In.*
	11	41		III.	Tr.	Eg.*		22	45		I.	Tr.	Eg.		10	1		IV.	Tr.	In.*
	15	14		IV.	Sh.	In.*		23	6		II.	Sh.	In.		13	51		IV.	Sh.	Eg.*
	19	37		IV.	Tr.	In.		23	27	21.8	IV.	Ec.	Dis.		14	40		IV.	Tr.	Eg.*
	19	40		IV.	Sh.	Eg.		23	41		II.	Tr.	In.		16	29		I.	Sh.	In.
	21	2	39.2	I.	Ec.	Dis.	**13**	2	2		II.	Sh.	Eg.		16	34		I.	Tr.	In.
	23	50		I.	Oc.	Re.		2	38		II.	Tr.	Eg.		18	49		I.	Sh.	Eg.
5	0	17		IV.	Tr.	Eg.		6	39		IV.	Oc.	Re.		18	54		I.	Tr.	Eg.
	18	12		I.	Sh.	In.		17	25	52.4	I.	Ec.	Dis.		20	8	50.7	II.	Ec.	Dis.
	18	41		I.	Tr.	In.		20	0		I.	Oc.	Re.		23	10		II.	Oc.	Re.
	20	29		II.	Sh.	In.	**14**	14	35		I.	Sh.	In.*	**22**	4	7	44.7	III.	Ec.	Dis
	20	32		I.	Sh.	Eg.		14	50		I.	Tr.	In.*		7	54		III.	Oc.	Re.
	21	1		I.	Tr.	Eg.		16	55		I.	Sh.	Eg.		13	49	8.5	I.	Ec.	Dis.*
	21	24		II.	Tr.	In.		17	10		I.	Tr.	Eg.		16	10		I.	Oc.	Re.
	23	25		II.	Sh.	Eg.		17	34	12.1	II.	Ec.	Dis.	**23**	10	57		I.	Sh.	In.*
6	0	20		II.	Tr.	Eg.		20	57		II.	Oc.	Re.		11	0		I.	Tr.	In.*
	15	31	19.9	I.	Ec.	Dis.*	**15**	0	7	58.3	III.	Ec.	Dis.		13	17		I.	Sh.	Eg.*
	18	16		I.	Oc.	Re.		4	38		III.	Oc.	Re.		13	20		I.	Tr.	Eg.*
7	12	40		I.	Sh.	In.*		11	54	27.4	I.	Ec.	Dis.*		15	2		II.	Sh.	In.*
	13	7		I.	Tr.	In.*		14	26		I.	Oc.	Re.*		15	5		II.	Tr.	In.*
	14	59	45.5	II.	Ec.	Dis.*	**16**	9	3		I.	Sh.	In.*		17	59		II.	Sh.	Eg.
	15	0		I.	Sh.	Eg.*		9	16		I.	Tr.	In.*		18	2		II.	Tr.	Eg.
	15	27		I.	Tr.	Eg.*		11	23		I.	Sh.	Eg.*	**24**	8	16		I.	Oc.	Dis.*
	18	43		II.	Oc.	Re.		11	36		I.	Tr.	Eg.*		10	36		I.	Oc.	Re.*
	20	8	16.3	III.	Ec.	Dis.		12	25		II.	Sh.	In.*	**25**	5	25		I.	Tr.	In.
8	1	21		III.	Oc.	Re.		12	49		II.	Tr.	In.*		5	26		I.	Sh.	In.
	9	59	53.1	I.	Ec.	Dis.*		15	21		II.	Sh.	Eg.*		7	45		I.	Tr.	Eg.
	12	42		I.	Oc.	Re.*		15	46		II.	Tr.	Eg.*		7	46		I.	Sh.	Eg.
9	7	9		I.	Sh.	In.	**17**	6	23	9.9	I.	Ec.	Dis.		9	20		II.	Oc.	Dis.*
	7	33		I.	Tr.	In.		8	52		I.	Oc.	Re.*		12	17		II.	Oc.	Re.*
	9	29		I.	Sh.	Eg.*	**18**	3	32		I.	Sh.	In.		17	55		III.	Tr.	In.
	9	48		II.	Sh.	In.*		3	42		I.	Tr.	In.		18	3		III.	Sh.	In.

In., denotes ingress; Eg., egress: Dis., disappearance; Re., reappearance. *Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

d	h	m	s				d	h	m	s				d	h	m	s			
25	21	32		III.	Tr.	Eg.	27	21	8		I.	Oc.	Dis.	29	17	59	41.5	I.	Ec.	Re.
	21	38		III.	Sh.	Eg.		21	31	3.1	I.	Ec.	Re.		21	55	39.1	IV.	Ec.	Re.
26	2	42		I.	Oc.	Dis.	28	18	17		I.	Tr.	In.	30	12	43		I.	Tr.	In.*
	5	2	17.3	I.	Ec.	Re.		18	23		I.	Sh.	In.		12	52		I.	Sh.	In.*
	23	51		I.	Tr.	In.		20	37		I.	Tr.	Eg.		15	3		I.	Tr.	Eg.*
	23	54		I.	Sh.	In.		20	43		I.	Sh.	Eg.		15	12		I.	Sh.	Eg*
27	2	11		I.	Tr.	Eg.		22	27		II.	Oc.	Dis.		17	21		II.	Tr.	In.
	2	14		I.	Sh.	Eg.	29	1	33	43.7	II.	Ec.	Re.		17	39		II.	Sh.	In.
	4	13		II.	Tr.	In.		7	33		III.	Oc.	Dis.		20	18		II.	Tr.	Eg.
	4	20		II.	Sh.	In.		11	33	56.3	III.	Ec.	Re.*		20	36		II.	Sh.	Eg.
	7	10		II.	Tr.	Eg.		15	34		I.	Oc.	Dis.*	31	10	0		I.	Oc.	Dis.*
	7	17		II.	Sh.	Eg.		16	12		IV.	Oc.	Dis.		12	28	27.1	I.	Ec.	Re.*

AUGUST.

1	7	9		I.	Tr.	In.	8	13	48		II.	Oc.	Dis.*	16	7	26		III.	Tr.	Eg.*
	7	20		I.	Sh.	In.		17	26	39.5	II.	Ec.	Re.		7	56		I.	Oc.	Dis.*
	9	29		I.	Tr.	Eg.*	9	0	29		III.	Tr.	In.		9	40		III.	Sh.	Eg.*
	9	40		I.	Sh.	Eg.*		2	3		III.	Sh.	In.		10	47	7.2	I.	Ec.	Re.*
	11	34		II.	Oc.	Dis.*		4	6		III.	Tr.	Eg.	17	5	3		I.	Tr.	In.
	14	51	19.0	II.	Ec.	Re.*		5	40		III.	Sh.	Eg.		5	38		I	Sh.	In.
	21	12		III.	Tr.	In.		6	11		I.	Oc.	Dis.		7	23		I.	Tr.	Eg.
	22	4		III.	Sh.	In.		8	52	4.9	I.	Ec.	Re.*		7	58		I.	Sh.	Eg.*
2	0	49		III.	Tr.	Eg.	10	3	19		I.	Tr.	In.		11	4		II.	Tr.	In.*
	1	39		III.	Sh.	Eg.		3	44		I.	Sh.	In.		12	13		II.	Sh.	In.*
	4	26		I.	Oc.	Dis.		5	39		I.	Tr.	Eg.		14	0		II.	Tr.	Eg.*
	6	57	8.2	I.	Ec.	Re.		6	4		I.	Sh.	Eg.		15	10		II.	Sh.	Eg.
3	1	35		I.	Tr.	In.		8	46		II.	Tr.	In.*	18	2	22		I.	Oc.	Dis.
	1	49		I.	Sh.	In.		9	36		II.	Sh.	In.*		5	15	57.2	I.	Ec.	Re.
	3	55		I.	Tr.	Eg.		11	42		II.	Tr.	Eg.*		23	30		I.	Tr.	In.
	4	9		I.	Sh.	Eg.		12	32		II.	Sh.	Eg.*	19	0	7		I.	Sh.	In.
	6	30		II.	Tr.	In.	11	0	37		I.	Oc.	Dis.		1	50		I.	Tr.	Eg.
	6	58		II.	Sh.	In.		3	20	53.7	I.	Ec.	Re.		2	27		I.	Sh.	Eg.
	9	26		II.	Tr.	Eg.*		21	45		I.	Tr.	In.		5	12		II.	Oc.	Dis.
	9	55		II.	Sh.	Eg.*		22	12		I.	Sh.	In.		9	20	9.9	II.	Ec.	Re.*
	22	52		I.	Oc.	Dis.	12	0	5		I.	Tr.	Eg.		17	30		III.	Oc.	Dis.
4	1	25	55.5	I.	Ec.	Re.		0	32		I.	Sh.	Eg.		20	49		I.	Oc.	Dis.
	20	1		I.	Tr.	In.		2	56		II.	Oc.	Dis.		23	36	9.1	III.	Ec.	Re.
	20	18		I.	Sh.	In.		6	44	26.3	II.	Ec.	Re.		23	44	40.2	I.	Ec.	Re.
	22	21		I.	Tr.	Eg.		14	9		III.	Oc.	Dis.*	20	17	56		I.	Tr.	In.
	22	38		I.	Sh.	Eg.		19	3		I.	Oc.	Dis.		18	36		I.	Sh.	In.
5	0	41		II.	Oc.	Dis.		19	35	14.5	III.	Ec.	Re.		20	16		I.	Tr.	Eg.
	4	8	57.6	II.	Ec.	Re.		21	49	35.3	I.	Ec.	Re.		20	56		I.	Sh.	Eg.
	10	50		III.	Oc.	Dis.*	13	16	11		I.	Tr.	In.	21	0	13		II.	Tr.	In.
	15	34	17.2	III.	Ec.	Re.		16	41		I.	Sh.	In.		1	32		II.	Sh.	In.
	17	18		I.	Oc.	Dis.		18	31		I.	Tr.	Eg.		3	9		II.	Tr.	Eg.
	19	54	35.8	I.	Ec.	Re.		19	1		I.	Sh.	Eg.		4	29		II.	Sh.	Eg.
6	14	27		I.	Tr.	In.*		21	55		II.	Tr.	In.		15	15		I.	Oc.	Dis.
	14	46		I.	Sh.	In.*		22	55		II.	Sh.	In.		18	13	20.4	I.	Ec.	Re.
	16	47		I.	Tr.	Eg.	14	0	51		II.	Tr.	Eg.	22	12	23		I.	Tr.	In.*
	17	6		I.	Sh.	Eg.		1	51		II.	Sh.	Eg.		13	4		I.	Sh.	In.*
	19	38		II.	Tr.	In.		13	30		I.	Oc.	Dis.*		14	43		I.	Tr.	Eg.
	20	17		II.	Sh.	In.		16	18	23.4	I.	Ec.	Re.		15	24		I.	Sh.	Eg.
	22	34		II.	Tr.	Eg.	15	6	33		IV.	Oc.	Dis.		18	22		II.	Oc.	Dis.
	23	14		II.	Sh.	Eg.		10	37		I.	Tr.	In.*		22	38	4.3	II.	Ec.	Re.
7	0	20		IV.	Tr.	In.		11	10		I.	Sh.	In.*	23	7	12		III.	Tr.	In.
	3	28		IV.	Sh.	In.		11	11		IV.	Oc.	Re.*		9	42		I.	Oc.	Dis.*
	4	58		IV.	Tr.	Eg.		11	38	29.4	IV.	Ec.	Dis.*		10	3		III.	Sh.	In.*
	8	3		IV.	Sh.	Eg.*		12	57		I.	Tr.	Eg.*		10	48		III.	Tr.	Eg.*
	11	45		I.	Oc.	Dis.*		13	30		I.	Sh.	Eg.*		12	42	14.5	I.	Ec.	Re.*
	14	23	22.4	I.	Ec.	Re.*		16	4		II.	Oc.	Dis.		13	40		III.	Sh.	Eg.*
8	8	53		I.	Tr.	In.*		16	5	15.8	IV.	Ec.	Re.		15	1		IV.	Tr.	In.
	9	15		I.	Sh.	In.*		20	2	14.5	II.	Ec.	Re.		19	37		IV.	Tr.	Eg.
	11	13		I.	Tr.	Eg.*	16	3	49		III.	Tr.	In.		21	37		IV.	Sh.	In.
	11	35		I.	Sh.	Eg.*		6	3		III.	Sh.	In.	24	2	15		IV.	Sh.	Eg.

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington.
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s				d	h	m	s				d	h	m	s			
24	6	49		I.	Tr.	In.	**26**	22	35		I.	Oc.	Dis.	**29**	20	40		II.	Oc.	Dis.
	7	33		I.	Sh.	In.*	**27**	1	39	49.8	I.	Ec.	Re.	**30**	1	14	8.0	II.	Ec.	Re.
	9	9		I.	Tr.	Eg.*		3	37	41.4	III.	Ec.	Re.		10	38		III.	Tr.	In.*
	9	53		I.	Sh.	Eg.*		19	42		I.	Tr.	In.		11	29		I.	Oc.	Dis.*
	13	23		II.	Tr.	In.*		20	30		I.	Sh.	In.		14	4		III.	Sh.	In.
	14	50		II.	Sh.	In.		22	2		I.	Tr.	Eg.		14	14		III.	Tr.	Eg.
	16	19		II.	Tr.	Eg.		22	50		I.	Sh.	Eg.		14	37	26.0	I.	Ec.	Re.
	17	47		II.	Sh.	Eg.	**28**	2	33		II.	Tr.	In.		17	42		III.	Sh.	Eg.
25	4	8		I.	Oc.	Dis.		4	9		II.	Sh.	In.	**31**	8	36		I.	Tr.	In.*
	7	11	5.5	I.	Ec.	Re.		5	29		II.	Tr.	Eg.		9	28		I.	Sh.	In.*
26	1	16		I.	Tr.	In.		7	6		II.	Sh.	Eg.		10	56		I.	Tr.	Eg.*
	2	2		I.	Sh.	In.		17	2		I.	Oc.	Dis.		11	48		I.	Sh.	Eg.*
	3	36		I.	Tr.	Eg.		20	8	39.9	I.	Ec.	Re.		15	44		II.	Tr.	In.
	4	22		I.	Sh.	Eg.	**29**	14	9		I.	Tr.	In.		17	28		II.	Sh.	In.
	7	30		II.	Oc.	Dis.*		14	59		I.	Sh.	In.		18	40		II.	Tr.	Eg.
	11	56	7.8	II.	Ec.	Re.*		16	29		I.	Tr.	Eg.		20	24		II.	Sh.	Eg.
	20	55		III.	Oc.	Dis.		17	19		I.	Sh.	Eg.		21	28		IV.	Oc.	Dis.

SEPTEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	2	5		IV.	Oc.	Re.	**7**	21	3		II.	Tr.	Eg.	**14**	15	38		I.	Sh.	Eg.
	5	45	25.0	IV.	Ec.	Dis.		23	2		II.	Sh.	Eg.		20	31		II.	Tr.	In.
	5	56		I.	Oc.	Dis.	**8**	7	43		I.	Oc.	Dis.		22	48		II.	Sh.	In.
	9	6	18.1	I.	Ec.	Dis.*		11	1	34.5	I.	Ec.	Re.*		23	27		II.	Tr.	Eg.
	10	15	29.2	IV.	Ec.	Re.*	**9**	4	51		I.	Tr.	In.	**15**	1	39		II.	Sh.	Eg.
2	3	3		I.	Tr.	In.		5	57		I.	Sh.	In.		9	33		I.	Oc.	Dis.*
	3	56		I.	Sh.	In.		6	4		IV.	Tr.	In.		12	56	53.6	I.	Ec.	Re.
	5	23		I.	Tr.	Eg.		7	11		I.	Tr.	Eg.*	**16**	6	40		I.	Tr.	In.
	6	16		I.	Sh.	Eg.		8	11		I.	Sh.	Eg.*		7	47		I.	Sh.	In.*
	9	50		II.	Oc.	Dis.*		10	40		IV.	Tr.	Eg.*		9	0		I.	Tr.	Eg.*
	14	32	20.3	II.	Ec.	Re.		12	13		II.	Oc.	Dis.*		10	7		I.	Sh.	Eg.*
3	0	22		I.	Oc.	Dis.		15	47		IV.	Sh.	In.		14	37		II.	Oc.	Dis.
	0	23		III.	Oc.	Dis.		17	8	47.0	II.	Ec.	Re.		19	45	28.2	II.	Ec.	Re.
	3	35	3.4	I.	Ec.	Re.		20	28		IV.	Sh.	Eg.	**17**	4	0		I.	Oc.	Dis.
	3	59		III.	Oc.	Re.	**10**	2	11		I.	Oc.	Dis.		7	25	40.7	I.	Ec.	Re.*
	4	9	50.9	III.	Ec.	Dis.		3	56		III.	Oc.	Dis.		7	33		III.	Oc.	Dis.*
	7	38	40.3	III.	Ec.	Re.*		5	30	20.8	I.	Ec.	Re.		11	8		III.	Oc.	Re.*
	21	30		I.	Tr.	In.		7	32		III.	Oc.	Re.*		12	10	52.9	III.	Ec.	Dis.
	22	25		I.	Sh.	In.		8	10	26.0	III.	Ec.	Dis.*		13	15		IV.	Oc.	Dis.
	23	50		I.	Tr.	Eg.		11	39	39.4	III.	Ec.	Re.*		15	40	28.9	III.	Ec.	Re.
4	0	45		I.	Sh.	Eg.		23	18		I.	Tr.	In.		17	51		IV.	Oc.	Re.
	4	55		II.	Tr.	In.	**11**	0	20		I.	Sh.	In.		23	53	32.9	IV.	Ec.	Dis.
	6	47		II.	Sh.	In.		1	38		I.	Tr.	Eg.	**18**	1	7		I.	Tr.	In.
	7	51		II.	Tr.	Eg.*		2	40		I.	Sh.	Eg.		2	15		I.	Sh.	In.
	9	43		II.	Sh.	Eg.*		7	19		II.	Tr.	In.*		3	27		I.	Tr.	Eg.
	18	49		I.	Oc.	Dis.		9	24		II.	Sh.	In.*		4	26	34.9	IV.	Ec.	Re.
	22	3	54.6	I.	Ec.	Re.		10	15		II.	Tr.	Eg.*		4	35		I.	Sh.	Eg.
5	15	57		I.	Tr.	In.		12	20		II.	Sh.	Eg.*		9	44		II.	Tr.	In.*
	16	54		I.	Sh.	In.		20	38		I.	Oc.	Dis.		12	1		II.	Sh.	In.*
	18	17		I.	Tr.	Eg.		23	59	12.4	I.	Ec.	Re.		12	40		II.	Tr.	Eg.
	19	14		I.	Sh.	Eg.	**12**	17	45		I.	Tr.	In.		14	58		II.	Sh.	Eg.
	23	1		II.	Oc.	Dis.		18	49		I.	Sh.	In.		22	28		I.	Oc.	Dis.
6	3	50	26.0	II.	Ec.	Re.		20	5		I.	Tr.	Eg.	**19**	1	54	32.6	I.	Ec.	Re.
	13	16		I.	Oc.	Dis.		21	9		I.	Sh.	Eg.		19	35		I.	Tr.	In.
	14	8		III.	Tr.	In.	**13**	1	24		II.	Oc.	Dis.		20	44		I.	Sh.	In.
	16	32	41.6	I.	Ec.	Re.		6	26	58.2	II.	Ec.	Re.		21	55		I.	Tr.	Eg.
	17	44		III.	Tr.	Eg.		15	5		I.	Oc.	Dis.		23	4		I.	Sh.	Eg.
	18	4		III.	Sh.	In.		17	43		III.	Tr.	In.	**20**	3	50		II.	Oc.	Dis.
	21	43		III.	Sh.	Eg.		18	28	0.1	I.	Ec.	Re.		9	3	44.2	II.	Ec.	Re.*
7	10	24		I.	Tr.	In.*		21	19		III.	Tr.	Eg.		16	55		I.	Oc.	Dis.
	11	22		I.	Sh.	In.*		22	5		III.	Sh.	In.		20	23	21.0	I.	Ec.	Re.
	12	44		I.	Tr.	Eg.*	**14**	1	44		III.	Sh.	Eg.		21	24		III.	Tr.	In.
	13	42		I.	Sh.	Eg.		12	12		I.	Tr.	In.*	**21**	1	0		III.	Tr.	Eg.
	18	7		II.	Tr.	In.		13	18		I.	Sh.	In.		2	7		III.	Sh.	In.
	20	6		II.	Sh.	In.		14	32		I.	Tr.	Eg.		5	46		III.	Sh.	Eg.

In., denotes ingress; Eg., egress: Dis.. disappearance; Re., reappearance. *Visible at Washington.

WASHINGTON MEAN TIME.

SEPTEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
21	14	3		I.	Tr.	In.	24	19	41	26.8	III.	Ec.	Re.	27	18	47		I.	Oc.	Dis.
	15	13		I.	Sh.	In.	25	2	58		I.	Tr.	In.		22	18	43.7	I.	Ec.	Re.
	16	23		I.	Tr.	Eg.		4	11		I.	Sh.	In.	28	1	8		III.	Tr.	In.
	17	33		I.	Sh.	Eg.		5	18		I.	Tr.	Eg.		4	44		III.	Tr.	Eg.
	22	58		II.	Tr.	In.		6	31		I.	Sh.	Eg.		6	8		III.	Sh.	In.
22	1	20		II.	Sh.	In.		12	13		II.	Tr.	In.		9	47		III.	Sh.	Eg.*
	1	54		II.	Tr.	Eg.		14	38		II.	Sh.	In.		15	54		I.	Tr.	In.
	4	17		II.	Sh.	Eg.		15	9		II.	Tr.	Eg.		17	8		I.	Sh.	In.
	11	23		I.	Oc.	Dis.*		17	35		II.	Sh.	Eg.		18	14		I.	Tr.	Eg.
	14	52	14.4	I.	Ec.	Re.		22	42		IV.	Tr.	In.		19	28		I.	Sh.	Eg.
23	8	30		I.	Tr.	In.*	26	0	19		I.	Oc.	Dis.	29	1	28		II.	Tr.	In.
	9	42		I.	Sh.	In.*		3	17		IV.	Tr.	Eg.		3	57		II.	Sh.	In.
	10	50		I.	Tr.	Eg.*		3	49	54.6	I.	Ec.	Re.		4	24		II.	Tr.	Eg.
	12	2		I.	Sh.	Eg.		9	57		IV.	Sh.	In.*		6	54		II.	Sh.	Eg.*
	17	4		II.	Oc.	Dis.		14	41		IV.	Sh.	Eg.		13	15		I.	Oc.	Dis.
	22	22	22.4	II.	Ec.	Re.		21	26		I.	Tr.	In.		16	47	37.5	I.	Ec.	Re.
24	5	51		I.	Oc.	Dis.		22	40		I.	Sh.	In.	30	10	22		I.	Tr.	In.*
	9	21	2.7	I.	Ec.	Re.*		23	46		I.	Tr.	Eg.		11	37		I.	Sh.	In.
	11	15		III.	Oc.	Dis.*	27	1	0		I.	Sh.	Eg.		12	42		I.	Tr.	Eg.
	14	50		III.	Oc.	Re.		6	18		II.	Oc.	Dis.		13	57		I.	Sh.	Eg.
	16	11	29.2	III.	Ec.	Dis.		11	40	42.2	II.	Ec.	Re.		19	33		II.	Oc.	Dis.

OCTOBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	0	59	28.4	II.	Ec.	Re.	6	15	7		I.	Oc.	Dis.	12	23	20		I.	Sh.	Eg.
	7	43		I.	Oc.	Dis.*		18	43	0.7	I.	Ec.	Re.	13	4	8		IV.	Sh.	In.
	11	16	25.8	I.	Ec.	Re.	7	12	15		I.	Tr.	In.		6	31		II.	Tr.	In.*
	15	1		III.	Oc.	Dis.		13	33		I.	Sh.	In.		8	55		IV.	Sh.	Eg.*
	18	37		III.	Oc.	Re.		14	35		I.	Tr.	Eg.		9	11		II.	Sh.	In.*
	20	12	38.6	III.	Ec.	Dis.		15	53		I.	Sh.	Eg.		9	27		II.	Tr.	Eg.*
	23	42	56.8	III.	Ec.	Re.		22	5		II.	Oc.	Dis.		12	7		II.	Sh.	Eg.
2	4	50		I.	Tr.	In.	8	3	36	46.1	II.	Ec.	Re.		17	1		I.	Oc.	Dis.
	6	6		I.	Sh.	In.		9	36		I.	Oc.	Dis.*		20	38	23.4	I.	Ec.	Re.
	7	10		I.	Tr.	Eg.*		13	11	49.1	I.	Ec.	Re.	14	14	9		I.	Tr.	In.
	8	26		I.	Sh.	Eg.*		18	53		III.	Oc.	Dis.		15	29		I.	Sh.	In.
	14	43		II.	Tr.	In.		22	29		III.	Oc.	Re.		16	29		I.	Tr.	Eg.
	17	15		II.	Sh.	In.	9	0	13	39.8	III.	Ec.	Dis.		17	49		I.	Sh.	Eg.
	17	39		II.	Tr.	Eg.		3	44	17.4	III.	Ec.	Re.	15	0	39		II.	Oc.	Dis.
	20	12		II.	Sh.	Eg.		6	43		I.	Tr.	In.*		6	14	14.4	II.	Ec.	Re.
3	2	11		I.	Oc.	Dis.		8	2		I.	Sh.	In.*		11	30		I.	Oc.	Dis.
	5	45	17.7	I.	Ec.	Re.		9	3		I.	Tr.	Eg.*		15	7	11.6	I.	Ec.	Re.
	23	18		I.	Tr.	In.		10	22		I.	Sh.	Eg.*		22	50		III.	Oc.	Dis.
4	0	35		I.	Sh.	In.		17	15		II.	Tr.	In.	16	2	26		III.	Oc.	Re.
	1	38		I.	Tr.	Eg.		19	52		II.	Sh.	In.		4	15	14.0	III.	Ec.	Dis.
	2	55		I.	Sh.	Eg.		20	11		II.	Tr.	Eg.		7	46	9.8	III.	Ec.	Re.*
	6	1		IV.	Oc.	Dis.		22	49		II.	Sh.	Eg.		8	38		I.	Tr.	In.*
	8	48		II.	Oc.	Dis.*	10	4	4		I.	Oc.	Dis.		9	58		I.	Sh.	In.*
	10	36		IV.	Oc.	Re.*		7	40	40.9	I.	Ec.	Re.*		10	58		I.	Tr.	Eg.
	14	17	52.1	II.	Ec.	Re.	11	1	12		I.	Tr.	In.		12	18		I.	Sh.	Eg.
	18	2	6.1	IV.	Ec.	Dis.		2	31		I.	Sh.	In.		19	48		II.	Tr.	In.
	20	39		I.	Oc.	Dis.		3	32		I.	Tr.	Eg.		22	29		II.	Sh.	In.
	22	37	44.5	IV.	Ec.	Re.		4	51		I.	Sh.	Eg.		22	44		II.	Tr.	Eg.
5	0	14	6.8	I.	Ec.	Re.		11	22		II.	Oc.	Dis.	17	1	25		II.	Sh.	Eg.
	4	57		III.	Tr.	In.		16	55	13.1	II.	Ec.	Re.		5	58		I.	Oc.	Dis.
	8	33		III.	Tr.	Eg.*		22	33		I.	Oc.	Dis.		9	36	3.0	I.	Ec.	Re.*
	10	9		III.	Sh.	In.*	12	2	9	29.7	I.	Ec.	Re.	18	3	7		I.	Tr.	In.
	13	48		III.	Sh.	Eg.		8	51		III.	Tr.	In.*		4	27		I.	Sh.	In.
	17	46		I.	Tr.	In.		12	27		III.	Tr.	Eg.		5	27		I.	Tr.	Eg.
	19	4		I.	Sh.	In.		14	9		III.	Sh.	In.		6	47		I.	Sh.	Eg.*
	20	6		I.	Tr.	Eg.		16	59		IV.	Tr.	In.		13	57		II.	Oc.	Dis.
	21	24		I.	Sh.	Eg.		17	49		III.	Sh.	Eg.		19	32	44.3	II.	Ec.	Re.
6	3	59		II.	Tr.	In.		19	40		I.	Tr.	In.	19	0	27		I.	Oc.	Dis.
	6	34		II.	Sh.	In.		20	34		IV.	Tr.	Eg.		4	4	51.9	I.	Ec.	Re.
	6	55		II.	Tr.	Eg.*		21	0		I.	Sh.	In.		12	49		III.	Tr.	In.
	9	31		II.	Sh.	Eg.*		22	0		I.	Tr.	Eg.		16	25		III.	Tr.	Eg.

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington.
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

WASHINGTON MEAN TIME.

OCTOBER.

d	h	m	s				d	h	m	s				d	h	m	s			
19	18	10		III.	Sh.	In.	23	11	54		I.	Sh.	In.	27	20	52		I.	Oc.	Dis.
	21	36		I.	Tr.	In.		12	54		I.	Tr.	Eg.	28	0	29	5.9	I.	Ec.	Re.
	21	51		III.	Sh.	Eg.		14	14		I.	Sh.	Eg.		18	1		I.	Tr.	In.
	22	56		I.	Sh.	In.		22	24		II.	Tr.	In.		19	20		I.	Sh.	In.
	23	56		I.	Tr.	Eg.	24	1	6		II.	Sh.	In.		20	21		I.	Tr.	Eg.
20	1	16		I.	Sh.	Eg.		1	20		II.	Tr.	Eg.		21	40		I.	Sh.	Eg.
	9	6		II.	Tr.	In.*		4	2		II.	Sh.	Eg.	29	5	55		II.	Oc.	Dis.
	11	48		II.	Sh.	In.		7	54		I.	Oc.	Dis.*		10	11		IV.	Tr.	In.
	12	2		II.	Tr.	Eg.		11	31	24.6	I.	Ec.	Re.		11	29	38.7	II.	Ec.	Re.
	14	44		II.	Sh.	Eg.	25	5	3		I.	Tr.	In.		14	47		IV.	Tr.	Eg.
	18	56		I.	Oc.	Dis.		6	23		I.	Sh.	In.*		15	21		I.	Oc.	Dis.
	22	33	45.2	I.	Ec.	Re.		7	23		I.	Tr.	Eg.*		18	57	54.0	I.	Ec.	Re.
	23	43		IV.	Oc.	Dis.		8	43		I.	Sh.	Eg.*		22	19		IV.	Sh.	In.
21	4	20		IV.	Oc.	Re.		16	35		II.	Oc.	Dis.	30	3	9		IV.	Sh.	Eg.
	12	11	12.3	IV.	Ec.	Dis.		22	10	24.3	II.	Ec.	Re.		6	55		III.	Oc.	Dis.*
	16	5		I.	Tr.	In.	26	2	22		I.	Oc.	Dis.		10	31		III.	Oc.	Re.
	16	49	5.7	IV.	Ec.	Re.		6	0	13.1	I.	Ec.	Re.		12	17	2.9	III.	Ec.	Dis.
	17	25		I.	Sh.	In.		16	52		III.	Tr.	In.		12	30		I.	Tr.	In.
	18	25		I.	Tr.	Eg.		20	28		III.	Tr.	Eg.		13	49		I.	Sh.	In.
	19	45		I.	Sh.	Eg.		22	12		III.	Sh.	In.		14	50		I.	Tr.	Eg.
22	3	16		II.	Oc.	Dis.		23	32		I.	Tr.	In.		15	48	31.7	III.	Ec.	Re.
	8	51	52.3	II.	Ec.	Re.*	27	0	52		I.	Sh.	In.		16	9		I.	Sh.	Eg.
	13	25		I.	Oc.	Dis.		1	52		I.	Tr.	Eg.	31	1	2		II.	Tr.	In.
	17	2	33.6	I.	Ec.	Re.		1	52		III.	Sh.	Eg.		3	42		II.	Sh.	In.
23	2	50		III.	Oc.	Dis.		3	12		I.	Sh.	Eg.		3	58		II.	Tr.	Eg.
	6	26		III.	Oc.	Re.*		11	43		II.	Tr.	In.		6	38		II.	Sh.	Eg.*
	8	16	11.1	III.	Ec.	Dis.*		14	24		II.	Sh.	In.		9	50		I.	Oc.	Dis.
	10	34		I.	Tr.	In.		14	39		II.	Tr.	Eg.		13	26	44.2	I.	Ec.	Re.
	11	47	23.9	III.	Ec.	Re.		17	20		II.	Sh.	Eg.							

NOVEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	6	59		I.	Tr.	In.*	6	15	44		I.	Sh.	In.	10	19	59		II.	Tr.	Eg.
	8	17		I.	Sh.	In.*		16	17	43.2	III.	Ec.	Dis.		22	33		II.	Sh.	Eg.
	9	19		I.	Tr.	Eg.*		16	47		I.	Tr.	Eg.	11	0	47		I.	Oc.	Dis.
	10	38		I.	Sh.	Eg.		18	5		I.	Sh.	Eg.		4	19	39.6	I.	Ec.	Re.
	19	15		II.	Oc.	Dis.		18	20		IV.	Oc.	Dis.		21	56		I.	Tr.	In.
2	0	48	12.6	II.	Ec.	Re.		19	49	26.6	III.	Ec.	Re.		23	11		I.	Sh.	In.
	4	20		I.	Oc.	Dis.		22	59		IV.	Oc.	Re.	12	0	16		I.	Tr.	Eg.
	7	55	31.2	I.	Ec.	Re.*	7	3	42		II.	Tr.	In.		1	31		I.	Sh.	Eg.
	20	59		III.	Tr.	In.		6	18		II.	Sh.	In.*		11	19		II.	Oc.	Dis.
3	0	36		III.	Tr.	Eg.		6	21	10.9	IV.	Ec.	Dis.*		16	45	33.6	II.	Ec.	Re.
	1	29		I.	Tr.	In.		6	38		II.	Tr.	Eg.*		19	16		I.	Oc.	Dis.
	2	13		III.	Sh.	In.		9	15		II.	Sh.	Eg.		22	48	26.9	I.	Ec.	Re.
	2	46		I.	Sh.	In.		11	0	57.7	IV.	Ec.	Re.	13	15	14		III.	Oc.	Dis.
	3	49		I.	Tr.	Eg.		11	48		I.	Oc.	Dis.		16	26		I.	Tr.	In.
	5	7		I.	Sh.	Eg.		15	22	1.3	I.	Ec.	Re.		17	40		I.	Sh.	In.
	5	54		III.	Sh.	Eg.	8	8	57		I.	Tr.	In.*		18	46		I.	Tr.	Eg.
	14	22		II.	Tr.	In.		10	13		I.	Sh.	In.		18	51		III.	Oc.	Re.
	17	0		II.	Sh.	In.		11	17		I.	Tr.	Eg.		20	0		I.	Sh.	Eg.
	17	18		II.	Tr.	Eg.		12	34		I.	Sh.	Eg.		20	18	27.9	III.	Ec.	Dis.
	19	57		II.	Sh.	Eg.		21	57		II.	Oc.	Dis.		23	50	24.9	III.	Ec.	Re.
	22	49		I.	Oc.	Dis.	9	3	26	8.2	II.	Ec.	Re.	14	6	23		II.	Tr.	In.*
4	2	24	24.1	I.	Ec.	Re.		6	17		I.	Oc.	Dis.*		8	54		II.	Sh.	In.
	19	58		I.	Tr.	In.		9	50	48.4	I.	Ec.	Re.		9	20		II.	Tr.	Eg.
	21	15		I.	Sh.	In.	10	1	10		III.	Tr.	In.		11	51		II.	Sh.	Eg.
	22	18		I.	Tr.	Eg.		3	26		I.	Tr.	In.		13	46		I.	Oc.	Dis.
	23	36		I.	Sh.	Eg.		4	42		I.	Sh.	In.		17	17	15.4	I.	Ec.	Re.
5	8	36		II.	Oc.	Dis.*		4	47		III.	Tr.	Eg.	15	5	11		IV.	Tr.	In.
	14	7	32.7	II.	Ec.	Re.		5	46		I.	Tr.	Eg.		9	50		IV.	Tr.	Eg.
	17	18		I.	Oc.	Dis.		6	15		III.	Sh.	In.*		10	55		I.	Tr.	In.
	20	53	11.2	I.	Ec.	Re.		7	2		I.	Sh.	Eg.*		12	9		I.	Sh.	In.
6	11	3		III.	Oc.	Dis.		9	56		III.	Sh.	Eg.		13	15		I.	Tr.	Eg.
	14	27		I.	Tr.	In.		17	2		II.	Tr.	In.		14	29		I.	Sh.	Eg.
	14	39		III.	Oc.	Re.		19	36		II.	Sh.	In.		16	31		IV.	Sh.	In.

In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance. *Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s			
15	21	22		IV.	Sh.	Eg.
16	0	40		II.	Oc.	Dis.
	6	4	10.0	II.	Ec.	Re.*
	8	15		I.	Oc.	Dis.*
	11	46	2.2	I.	Ec.	Re.
17	5	24		III.	Tr.	In.
	5	25		I.	Tr.	In.
	6	38		I.	Sh.	In.*
	7	45		I.	Tr.	Eg.*
	9	1		III.	Tr.	Eg.
	9	58		I.	Sh.	Eg.
	10	16		III.	Sh.	In.
	13	58		III.	Sh.	Eg.
	19	45		II.	Tr.	In.
	22	12		II.	Sh.	In.
	22	41		II.	Tr.	Eg.
18	1	9		II.	Sh.	Eg.
	2	45		I.	Oc.	Dis.
	6	14	52.6	I.	Ec.	Re.*
	23	55		I.	Tr.	In.
19	1	7		I.	Sh.	In.
	2	15		I.	Tr.	Eg.
	3	27		I.	Sh.	Eg.
	14	3		II.	Oc.	Dis.
	19	23	39.5	II.	Ec.	Re.
	21	15		I.	Oc.	Dis.
20	0	43	39.2	I.	Ec.	Re.
	18	25		I.	Tr.	In.
	19	29		III.	Oc.	Dis.
	19	35		I.	Sh.	In.
	20	45		I.	Tr.	Eg.
	21	56		I.	Sh.	Eg.
	23	7		III.	Oc.	Re.
21	0	19	43.2	III.	Ec.	Dis.
	3	51	52.6	III.	Ec.	Re.
	9	7		II.	Tr.	In.
	11	30		II.	Sh.	In.
	12	3		II.	Tr.	Eg.
	14	27		II.	Sh.	Eg.
	15	44		I.	Oc.	Dis.
	19	12	26.9	I.	Ec.	Re.
22	12	55		I.	Tr.	In.
	14	4		I.	Sh.	In.
	15	15		I.	Tr.	Eg.
	16	25		I.	Sh.	Eg.
23	3	26		II.	Oc.	Dis.
	8	42	16.1	II.	Ec.	Re.
	10	14		I.	Oc.	Dis.
	13	41		IV.	Oc.	Dis.
	13	41	12.5	I.	Ec.	Re.
	18	22		IV.	Oc.	Re.
24	0	30	54.2	IV.	Ec.	Dis.
	5	12	12.8	IV.	Ec.	Re.
	7	25		I.	Tr.	In.*
	8	33		I.	Sh.	In.
	9	40		III.	Tr.	In.
	9	45		I.	Tr.	Eg.
	10	54		I.	Sh.	Eg.
	13	18		III.	Tr.	Eg.
	14	17		III.	Sh.	In.
	17	59		III.	Sh.	Eg.
	22	29		II.	Tr.	In.
25	0	48		II.	Sh.	In.
	1	25		II.	Tr.	Eg.
	3	45		II.	Sh.	Eg.
25	4	44		I.	Oc.	Dis.
	8	10	5.6	I.	Ec.	Re.
26	1	55		I.	Tr.	In.
	3	2		I.	Sh.	In.
	4	15		I.	Tr.	Eg.
	5	23		I.	Sh.	Eg.
	16	50		II.	Oc.	Dis.
	22	1	49.0	II.	Ec.	Re.
	23	14		I.	Oc.	Dis.
27	2	38	47.5	I.	Ec.	Re.
	20	25		I.	Tr.	In.
	21	31		I.	Sh.	In.
	22	45		I.	Tr.	Eg.
	23	48		III.	Oc.	Dis.
	23	52		I.	Sh.	Eg.
28	3	26		III.	Oc.	Re.
	4	20	44.3	III.	Ec.	Dis.
	7	53	4.9	III.	Ec.	Re.*
	11	51		II.	Tr.	In.
	14	6		II.	Sh.	In.
	14	47		II.	Tr.	Eg.
	17	2		II.	Sh.	Eg.
	17	44		I.	Oc.	Dis.
	21	7	34.1	I.	Ec.	Re.
29	14	55		I.	Tr.	In.
	16	0		I.	Sh.	In.
	17	15		I.	Tr.	Eg.
	18	21		I.	Sh.	Eg.
30	6	13		II.	Oc.	Dis.*
	11	20	25.7	II.	Ec.	Re.
	12	14		I.	Oc.	Dis.
	15	36	19.0	I.	Ec.	Re.

DECEMBER.

d	h	m	s			
1	9	25		I.	Tr.	In.
	10	29		I.	Sh.	In.
	11	45		I.	Tr.	Eg.
	12	50		I.	Sh.	Eg.
	14	0		III.	Tr.	In.
	17	38		III.	Tr.	Eg.
	18	18		III.	Sh.	In.
	22	0		III.	Sh.	Eg.
2	0	52		IV.	Tr.	In.
	1	14		II.	Tr.	In.
	3	24		II.	Sh.	In.
	4	10		II.	Tr.	Eg.
	5	35		IV.	Tr.	Eg.
	6	20		II.	Sh.	Eg.*
	6	44		I.	Oc.	Dis.*
	10	5	7.1	I.	Ec.	Re.
	10	43		IV.	Sh.	In.
	15	36		IV.	Sh.	Eg.
3	3	55		I.	Tr.	In.
	4	58		I.	Sh.	In.
	6	15		I.	Tr.	Eg.*
	7	18		I.	Sh.	Eg.*
	19	37		II.	Oc.	Dis.
4	0	40	1.5	II.	Ec.	Re.
	1	14		I.	Oc.	Dis.
	4	33	52.2	I.	Ec.	Re.
	22	26		I.	Tr.	In.
	23	27		I.	Sh.	In.
5	0	46		I.	Tr.	Eg.
5	1	47		I.	Sh.	Eg.
	4	9		III.	Oc.	Dis.
	7	48		III.	Oc.	Re.
	8	22	12.5	III.	Ec.	Dis.
	11	54	43.1	III.	Ec.	Re.
	14	37		II.	Tr.	In.
	16	42		II.	Sh.	In.
	17	33		II.	Tr.	Eg.
	19	38		II.	Sh.	Eg.
	19	44		I.	Oc.	Dis.
	23	2	37.7	I.	Ec.	Re.
6	16	56		I.	Tr.	In.
	17	56		I.	Sh.	In.
	19	16		I.	Tr.	Eg.
	20	16		I.	Sh.	Eg.
7	9	1		II.	Oc.	Dis.
	13	58	37.9	II.	Ec.	Re.
	14	14		I.	Oc.	Dis.
	17	31	21.6	I.	Ec.	Re.
8	11	26		I.	Tr.	In.
	12	25		I.	Sh.	In.
	13	46		I.	Tr.	Eg.
	14	45		I.	Sh.	Eg.
	18	22		III.	Tr.	In.
	22	1		III.	Tr.	Eg.
	22	20		III.	Sh.	In.
9	2	2		III.	Sh.	Eg.
	4	0		II.	Tr.	In.
	6	0		II.	Sh.	In.*
9	6	56		II.	Tr.	Eg.*
	8	44		I.	Oc.	Dis.
	8	56		II.	Sh.	Eg.
	12	0	8.4	I.	Ec.	Re.
10	5	56		I.	Tr.	In.*
	6	54		I.	Sh.	In.*
	8	16		I.	Tr.	Eg.
	9	14		I.	Sh.	Eg.
	9	37		IV.	Oc.	Dis.
	14	22		IV.	Oc.	Re.
	18	40	49.9	IV.	Ec.	Dis.
	22	26		II.	Oc.	Dis.
	23	23	18.9	IV.	Ec.	Re.
11	3	14		I.	Oc.	Dis.
	3	18	15.4	II.	Ec.	Re.
	6	28	52.7	I.	Ec.	Re.*
12	0	27		I.	Tr.	In.
	1	23		I.	Sh.	In.
	2	47		I.	Tr.	Eg.
	3	43		I.	Sh.	Eg.
	8	31		III.	Oc.	Dis.
	12	11		III.	Oc.	Re.
	12	22	59.8	III.	Ec.	Dis.
	15	55	39.4	III.	Ec.	Re.
	17	23		II.	Tr.	In.
	19	17		II.	Sh.	In.
	20	19		II.	Tr.	Eg.
	21	44		I.	Oc.	Dis.
	22	14		II.	Sh.	Eg.

NOTE.—For Phases of Eclipses see pages 464 and 465. * Visible at Washington.
Ec., denotes eclipse; Oc., occultation; Tr., transit of the satellite; Sh., transit of the shadow;

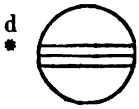
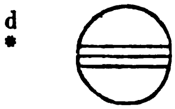
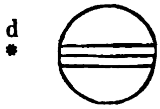
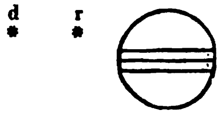
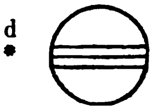
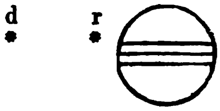
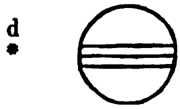
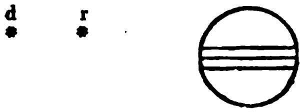
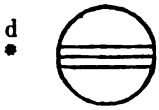
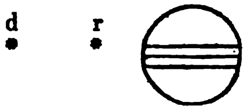
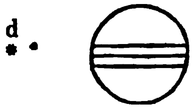
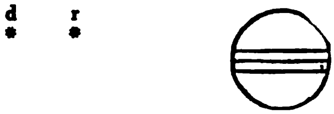
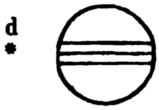
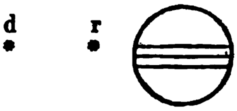
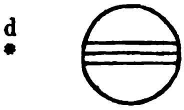
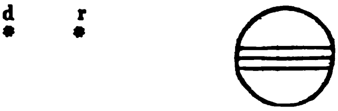
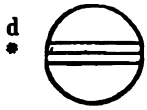
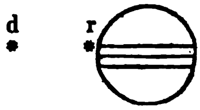
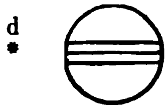
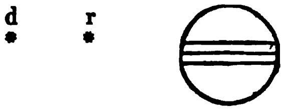
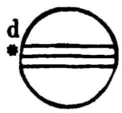
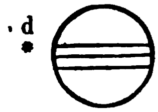
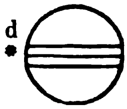
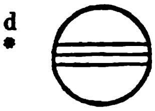
WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
13	0	57	37.0	I.	Ec.	Re.	19	19	56	25.5	III.	Ec.	Re.	26	7	33		I.	Sh.	Eg.
	18	57		I.	Tr.	In.		20	10		II.	Tr.	In.		17	22		III.	Oc.	Dis.
	19	52		I.	Sh.	In.		21	53		II.	Sh.	In.		22	58		II.	Tr.	In.
	21	17		I.	Tr.	Eg.		23	7		II.	Tr.	Eg.		23	56	57.5	III.	Ec.	Re.
	22	12		I.	Sh.	Eg.		23	45		I.	Oc.	Dis.	27	0	28		II.	Sh.	In.
14	11	51		II.	Oc.	Dis.	20	0	49		II.	Sh.	Eg.		1	46		I.	Oc.	Dis.
	16	14		I.	Oc.	Dis.		2	52	32.0	I.	Ec.	Re.		1	55		II.	Tr.	Eg.
	16	36	50.9	II.	Ec.	Re.		20	58		I.	Tr.	In.		3	24		II.	Sh.	Eg.
	19	26	20.0	I.	Ec.	Re.		21	47		I.	Sh.	In.		4	47	22.7	I.	Ec.	Re.
15	13	27		I.	Tr.	In.		23	18		I.	Tr.	Eg.		6	1		IV.	Oc.	Dis.*
	14	20		I.	Sh.	In.	21	0	7		I.	Sh.	Eg.		10	50		IV.	Oc.	Re.
	15	47		I.	Tr.	Eg.		14	41		II.	Oc.	Dis.		12	51	21.4	IV.	Ec.	Dis.
	16	40		I.	Sh.	Eg.		18	15		I.	Oc.	Dis.		17	34	39.4	IV.	Ec.	Re.
	22	46		III.	Tr.	In.		19	15	4.0	II.	Ec.	Re.		23	0		I.	Tr.	In.
16	2	21		III.	Sh.	In.		21	21	14.1	I.	Ec.	Re.		23	42		I.	Sh.	In.
	2	26		III.	Tr.	Eg.	22	15	28		I.	Tr.	In.	28	1	20		I.	Tr.	Eg.
	6	4		III.	Sh.	Eg.*		16	16		I.	Sh.	In.		2	2		I.	Sh.	Eg.
	6	46		II.	Tr.	In.*		17	48		I.	Tr.	Eg.		17	32		II.	Oc.	Dis.
	8	35		II.	Sh.	In.		18	36		I.	Sh.	Eg.		20	16		I.	Oc.	Dis.
	9	43		II.	Tr.	Eg.	23	3	12		III.	Tr.	In.		21	53	15.7	II.	Ec.	Re.
	10	44		I.	Oc.	Dis.		6	23		III.	Sh.	In.*		23	16	3.7	I.	Ec.	Re.
	11	32		II.	Sh.	Eg.		6	52		III.	Tr.	Eg.	29	17	30		I.	Tr.	In.
	13	55	5.6	I.	Ec.	Re.		9	34		II.	Tr.	In.		18	11		I.	Sh.	In.
17	7	57		I.	Tr.	In.		10	5		III.	Sh.	Eg.		19	50		I.	Tr.	Eg.
	8	49		I.	Sh.	In.		11	10		II.	Sh.	In.		20	31		I.	Sh.	Eg.
	10	17		I.	Tr.	Eg.		12	31		II.	Tr.	Eg.	30	7	41		III.	Tr.	In.
	11	9		I.	Sh.	Eg.		12	45		I.	Oc.	Dis.		10	24		III.	Sh.	In.
18	1	16		II.	Oc.	Dis.		14	7		II.	Sh.	Eg.		11	21		III.	Tr.	Eg.
	5	14		I.	Oc.	Dis.		15	49	58.2	I.	Ec.	Re.		12	22		II.	Tr.	In.
	5	56	29.8	II.	Ec.	Re.*	24	9	59		I.	Tr.	In.		13	46		II.	Sh.	In.
	8	23	49.1	I.	Ec.	Re.		10	45		I.	Sh.	In.		14	7		III.	Sh.	Eg.
	21	4		IV.	Tr.	In.		12	19		I.	Tr.	Eg.		14	47		I.	Oc.	Dis.
19	1	51		IV.	Tr.	Eg.		13	5		I.	Sh.	Eg.		15	20		II.	Tr.	Eg.
	2	28		I.	Tr.	In.	25	4	7		II.	Oc.	Dis.		16	42		II.	Sh.	Eg.
	3	18		I.	Sh.	In.		7	16		I.	Oc.	Dis.		17	44	46.6	I.	Ec.	Re.
	4	48		I.	Tr.	Eg.		8	34	43.1	II.	Ec.	Re.	31	12	0		I.	Tr.	In.
	4	55		IV.	Sh.	In.		10	18	41.1	I.	Ec.	Re.		12	40		I.	Sh.	In.
	5	38		I.	Sh.	Eg.*	26	4	29		I.	Tr.	In.		14	20		I.	Tr.	Eg.
	9	49		IV.	Sh.	Eg.		5	13		I.	Sh.	In.		15	0		I.	Sh.	Eg.
	12	56		III.	Oc.	Dis.		6	49		I.	Tr.	Eg.							

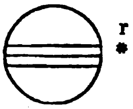
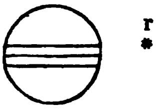
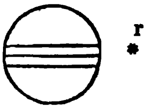
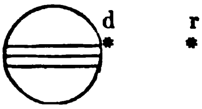
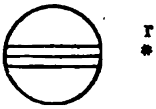
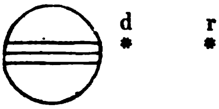
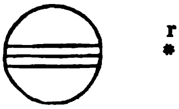
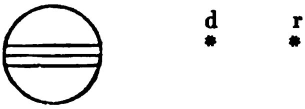
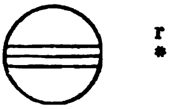
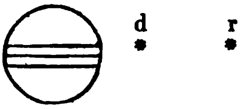
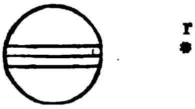
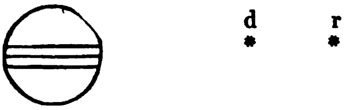
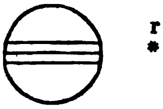
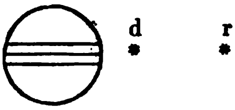
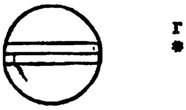
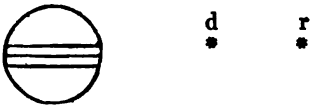
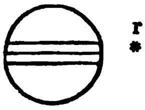
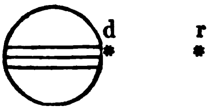
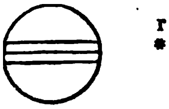
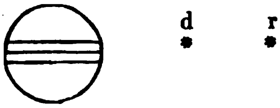
In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance. * Visible at Washington.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

February. I.		III.	
II.		IV.	
March. I.		III.	
II.		IV.	
April. I.		III.	
II.		IV.	
May. I.		III.	
II.		IV.	
June. I.		III.	
II.		IV.	
July. I.		III.	
II.		IV.	

NOTE.—Each diagram is given for the eclipse which occurs nearest the middle of the month.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

August. I.		III.	
II.		IV.	
September. I.		III.	
II.		IV.	
October. I.		III.	
II.		IV.	
November. I.		III.	
II.		IV.	
December. I.		III.	
II.		IV.	

Note.—Each diagram is given for the eclipse which occurs nearest the middle of the month.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

	h m		h m		h m		h m
Feb. 4	12 21.0	April 28	17 26.7	July 20	20 34.3	Oct. 11	23 42.5
6	6 51.3	30	11 55.1	22	15 0.2	13	18 11.1
8	1 21.5	May 2	6 23.4	24	9 26.3	15	12 39.7
9	19 51.6	4	0 51.6	26	3 52.2	17	7 8.4
11	14 21.9	5	19 19.7	27	22 18.3	19	1 37.1
13	8 52.0	7	13 47.9	29	16 44.2	20	20 6.0
15	3 22.1	9	8 15.9	31	11 10.3	22	14 34.9
16	21 52.1	11	2 43.9	Aug. 2	5 36.3	24	9 3.9
18	16 22.3	12	21 11.7	4	0 2.4	26	3 32.9
20	10 52.3	14	15 39.7	5	18 28.4	27	22 2.0
22	5 22.4	16	10 7.4	7	12 54.6	29	16 31.1
23	23 52.4	18	4 35.1	9	7 20.7	31	11 0.3
25	18 22.4	19	23 2.7	11	1 47.0	Nov. 2	5 29.5
27	12 52.4	21	17 30.4	12	20 13.2	3	23 58.9
Mar. 1	7 22.3	23	11 57.8	14	14 39.5	5	18 28.2
3	1 52.2	25	6 25.3	16	9 5.9	7	12 57.5
4	20 22.1	27	0 52 6	18	3 32.3	9	7 26.9
6	14 51.8	28	19 20.0	19	21 58.6	11	1 56.5
8	9 21.6	30	13 47.2	21	16 25.1	12	20 26.0
10	3 51.3	June 1	8 14.5	23	10 51.6	14	14 55.6
11	22 21.0	3	2 41.5	25	5 18.2	16	9 25.2
13	16 50.6	4	21 8.6	26	23 44.9	18	3 54.8
15	11 20.3	6	15 35.5	28	18 11.7	19	22 24.5
17	5 49.9	8	10 2.5	30	12 38.5	21	16 54.2
19	0 19.5	10	4 29.3	Sept. 1	7 5.5	23	11 24.0
20	18 49.0	11	22 56.2	3	1 32.3	25	5 53.9
22	13 18.4	13	17 22.9	4	19 59.3	27	0 23.7
24	7 47.8	15	11 49.7	6	14 26.3	28	18 53.6
26	2 17.3	17	6 16.2	8	8 53.4	30	13 23.6
27	20 46.6	19	0 42.8	10	3 20.6	Dec. 2	7 53.6
29	15 16.0	20	19 9.4	11	21 47.9	4	2 23.6
31	9 45.2	22	13 35.9	13	16 15.2	5	20 53.7
April 2	4 14.5	24	8 2.3	15	10 42.7	7	15 23.7
3	22 43.6	26	2 28.7	17	5 10.1	9	9 53.8
5	17 12.8	27	20 55.0	18	23 37.6	11	4 24.0
7	11 41.9	29	15 21.4	20	18 5.2	12	22 54.1
9	6 11.0	July 1	9 47.5	22	12 33.0	14	17 24.2
11	0 39.9	3	4 13.6	24	7 0.7	16	11 54.4
12	19 8.9	4	22 39.7	26	1 28.6	18	6 24.6
14	13 37.6	6	17 5.9	27	19 56.5	20	0 54.8
16	8 6.5	8	11 32.0	29	14 24.6	21	19 25.1
18	2 35.4	10	5 58.1	Oct. 1	8 52.6	23	13 55.5
19	21 4.1	12	0 24.1	3	3 20.8	25	8 25.8
21	15 32.7	13	18 50.2	4	21 49.0	27	2 56.1
23	10 1.3	15	13 16.2	6	16 17.2	28	21 26.4
25	4 29.8	17	7 42.3	8	10 45.6	30	15 56.8
26	22 58.3	19	2 8.3	10	5 14.1		

SATELLITE II.

	h m		h m		h m		h m
Feb. 4	22 11.4	Feb. 22	17 12.7	Mar. 12	12 8.1	Mar. 30	6 54.7
8	11 35.8	26	6 36.6	16	1 29.9	April 2	20 14.9
12	1 0.6	Mar. 1	19 59.8	19	14 51.7	6	9 34.6
15	14 24.7	5	9 22.9	23	4 13.1	9	22 53.9
19	3 49.1	8	22 45.6	26	17 34.2	13	12 12.7

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

		h m			h m			h m			h m
April	17	1 31.2	June	23	12 43.4	Aug.	26	8 58.3	Oct.	29	7 23.1
	20	14 49.2		27	1 51.6		29	22 8.0	Nov.	1	20 42.9
	24	4 6.7		30	14 59.5	Sept.	2	11 18.5		5	10 4.0
	27	17 23.6	July	4	4 7.2		6	0 29.2		8	23 24.9
May	1	6 40.1		7	17 14.5		9	13 40.7		12	12 46.8
	4	19 55.9		11	6 21.6		13	2 52.4		16	2 8.7
	8	9 11.4		14	19 28.5		16	16 4.8		19	15 31.6
	11	22 26.3		18	8 35.4		20	5 17.8		23	4 54.0
	15	11 40.6		21	21 42.1		23	18 31.7		26	18 17.7
	19	0 54.4		25	10 48.6		27	7 45.9		30	7 40.9
	22	14 7.7		28	23 55.4		30	21 1.2	Dec.	3	21 5.4
	26	3 20.5	Aug.	1	13 2.5	Oct.	4	10 16.6		7	10 29.3
	29	16 32.7		5	2 9.6		7	23 33.1		10	23 54.5
June	2	5 44.3		8	15 16.7		11	12 50.3		14	13 18.9
	5	18 55.3		12	4 24.2		15	2 7.5		18	2 44.5
	9	8 5.8		15	17 31.9		18	15 25.3		21	16 9.4
	12	21 15.9		19	6 40.1		22	4 44.3		25	5 35.4
	16	10 25.4		22	19 49.9		25	18 3.1		28	19 0.6
	19	23 34.6									

SATELLITE III.

		h m			h m			h m			h m
Feb.	7	12 25.8	May	4	15 15.8	July	29	9 21.5	Oct.	16	0 37.9
	14	16 52.6		11	19 8.4	Aug.	5	12 38.3		23	4 38.3
	21	21 18.1		18	22 57.1		12	15 56.8		30	8 42.8
Mar.	1	1 41.8		26	2 40.5		19	19 17.9	Nov.	6	12 51.0
	8	6 3.9	June	2	6 19.1		26	22 43.1		13	17 2.6
	15	10 22.6		9	9 52.9	Sept.	3	2 11.3		20	21 18.1
	22	14 39.9		16	13 22.7		10	5 43.7		28	1 36.7
	29	18 55.0		23	16 48.8		17	9 20.6	Dec.	5	5 58.2
April	5	23 6.3		30	20 11.4		24	13 2.4		12	10 20.9
	13	3 14.4	July	7	23 31.7	Oct.	1	16 49.3		19	14 45.4
	20	7 19.1		15	2 49.2		8	20 40.8		26	19 12.3
	27	11 19.2		22	6 5.7						

SATELLITE IV.

		h m			h m			h m			h m
Feb.	12	13 6.6	May	7	13 32.7	July	29	18 31.4	Oct.	21	2 1.5
Mar.	1	9 28.4		24	6 34.5	Aug.	15	8 51.7	Nov.	6	20 39.4
	18	5 26.4	June	9	22 38.9		31	23 46.5		23	16 1.6
Apr.	4	0 51.6		26	13 49.1	Sept.	17	15 33.1	Dec.	10	11 59.7
	20	19 36.5	July	13	4 19.1	Oct.	4	8 18.3		27	8 25.4

In the following Tables x and y are the rectangular coördinates for each Satellite, referred to the centre of the primary and the major and minor axes of the apparent ellipse described by the Satellite. x is positive on the *east* side of the planet; negative on the *west* side. y is positive when *north;* negative when *south.*

x' and y' are the coördinates which correspond to a constant value of the major axis and maximum value of the minor axis, as seen from the sun at its mean distance.

The factors by which x' and y' must be multiplied to obtain the coördinates x and y at any time, are given for each Satellite on pages 470 and 471.

p is the inclination of the minor axis of the apparent ellipse to the circle of declination; reckoned from the *north,* + towards the *east.*

COÖRDINATES IN THE MEAN APPARENT ELLIPSE DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (*t*) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

t	*x′*	*y′*	*t*	*x′*	*y′*	*t*	*x′*	*y′*
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 15 0	+ 87.1	− 4.0	1 6 0	−105.1	− 1.8
0 0 20	5.4	6.6	0 15 20	83.7	4.3	1 6 20	106.4	1.5
0 0 40	10.8	6.6	0 15 40	80.1	4.5	1 6 40	107.5	1.2
0 1 0	16.1	6.6	0 16 0	76.4	4.7	1 7 0	108.3	0.8
0 1 20	21.4	6.5	0 16 20	72.5	5.0	1 7 20	108.8	0.5
0 1 40	26.6	6.4	0 16 40	68.4	5.2	1 7 40	109.1	− 0.2
0 2 0	+ 31.8	+ 6.3	0 17 0	+ 64.1	− 5.4	1 8 0	−109.1	+ 0.1
0 2 20	36.9	6.2	0 17 20	59.6	5.5	1 8 20	108.9	0.5
0 2 40	42.0	6.1	0 17 40	55.0	5.7	1 8 40	108.4	0.8
0 3 0	46.9	6.0	0 18 0	50.3	5.9	1 9 0	107.6	1.1
0 3 20	51.7	5.8	0 18 20	45.5	6.0	1 9 20	106.6	1.4
0 3 40	56.4	5.7	0 18 40	40.5	6.1	1 9 40	105.3	1.8
0 4 0	+ 60.9	+ 5.5	0 19 0	+ 35.5	− 6.3	1 10 0	−103.8	+ 2.1
0 4 20	65.3	5.3	0 19 20	30.4	6.4	1 10 20	102.0	2.4
0 4 40	69.5	5.1	0 19 40	25.2	6.4	1 10 40	99.9	2.7
0 5 0	73.6	4.9	0 20 0	19.9	6.5	1 11 0	97.6	3.0
0 5 20	77.5	4.7	0 20 20	14.6	6.6	1 11 20	95.1	3.3
0 5 40	81.2	4.4	0 20 40	9.2	6.6	1 11 40	92.3	3.5
0 6 0	+ 84.7	+ 4.2	0 21 0	+ 3.8	− 6.6	1 12 0	− 89.3	+ 3.8
0 6 20	88.0	3.9	0 21 20	− 1.5	6.6	1 12 20	86.1	4.1
0 6 40	91.1	3.7	0 21 40	6.9	6.6	1 12 40	82.7	4.3
0 7 0	94.0	3.4	0 22 0	12.3	6.6	1 13 0	79.1	4.6
0 7 20	96.6	3.1	0 22 20	17.6	6.5	1 13 20	75.3	4.8
0 7 40	99.0	2.8	0 22 40	22.9	6.5	1 13 40	71.3	5.0
0 8 0	+101.1	+ 2.5	0 23 0	− 28.1	− 6.4	1 14 0	− 67.1	+ 5.2
0 8 20	103.0	2.2	0 23 20	33.3	6.3	1 14 20	62.8	5.4
0 8 40	104.7	1.9	0 23 40	38.4	6.2	1 14 40	58.3	5.6
0 9 0	106.1	1.6	1 0 0	43.4	6.1	1 15 0	53.7	5.8
0 9 20	107.3	1.3	1 0 20	48.3	5.9	1 15 20	49.0	5.9
0 9 40	108.1	0.9	1 0 40	53.1	5.8	1 15 40	44.1	6.1
0 10 0	+108.7	+ 0.6	1 1 0	− 57.7	− 5.6	1 16 0	− 39.1	+ 6.2
0 10 20	109.1	+ 0.3	1 1 20	62.2	5.4	1 16 20	34.0	6.3
0 10 40	109.1	− 0.1	1 1 40	66.6	5.2	1 16 40	28.9	6.4
0 11 0	109.0	0.4	1 2 0	70.8	5.0	1 17 0	23.7	6.5
0 11 20	108.6	0.7	1 2 20	74.8	4.8	1 17 20	18.4	6.5
0 11 40	107.9	1.0	1 2 40	78.6	4.6	1 17 40	13.0	6.6
0 12 0	+106.9	− 1.3	1 3 0	− 82.2	− 4.4	1 18 0	− 7.7	+ 6.6
0 12 20	105.7	1.7	1 3 20	85.6	4.1	1 18 20	− 2.3	6.6
0 12 40	104.2	2.0	1 3 40	88.9	3.8	1 18 40	+ 3.1	6.6
0 13 0	102.5	2.3	1 4 0	91.9	3.6	1 19 0	8.5	6.6
0 13 20	100.5	2.6	1 4 20	94.7	3.3	1 19 20	13.8	6.6
0 13 40	98.3	2.9	1 4 40	97.3	3.0	1 19 40	19.1	6.5
0 14 0	+ 95.8	− 3.2	1 5 0	− 99.6	− 2.7	1 20 0	+ 24.4	+ 6.5
0 14 20	93.1	3.5	1 5 20	101.7	2.4			
0 14 40	+ 90.2	− 3.7	1 5 40	−103.5	− 2.1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+12.2	1 6 0	+139.5	− 7.3	2 12 0	−166.4	− 3.5
0 0 40	8.5	12.2	1 6 40	134.2	7.7	2 12 40	168.6	2.9
0 1 20	17.0	12.1	1 7 20	128.6	8.2	2 13 20	170.4	2.3
0 2 0	25.5	12.1	1 8 0	122.7	8.6	2 14 0	171.9	1.8
0 2 40	33.9	12.0	1 8 40	116.5	9.0	2 14 40	173.0	1.2
0 3 20	42.2	11.8	1 9 20	110.1	9.4	2 15 20	173.6	− 0.6
0 4 0	+ 50.5	+11.7	1 10 0	+103.4	− 9.8	2 16 0	−173.8	0.0
0 4 40	58.6	11.5	1 10 40	96.4	10.1	2 16 40	173.6	+ 0.6
0 5 20	66.5	11.3	1 11 20	89.2	10.5	2 17 20	172.9	1.2
0 6 0	74.3	11.0	1 12 0	81.7	10.8	2 18 0	171.8	1.8
0 6 40	81.9	10.8	1 12 40	74.1	11.0	2 18 40	170.3	2.4
0 7 20	89.4	10.5	1 13 20	66.3	11.3	2 19 20	168.4	3.0
0 8 0	+ 96.6	+10.1	1 14 0	+ 58.3	−11.5	2 20 0	−166.2	+ 3.5
0 8 40	103.6	9.8	1 14 40	50.2	11.7	2 20 40	163.5	4.1
0 9 20	110.3	9.4	1 15 20	42.0	11.8	2 21 20	160.4	4.7
0 10 0	116.7	9.0	1 16 0	33.7	12.0	2 22 0	156.9	5.2
0 10 40	122.9	8.6	1 16 40	25.3	12.1	2 22 40	153.0	5.8
0 11 20	128.8	8.2	1 17 20	16.8	12.1	2 23 20	148.8	6.3
0 12 0	+134.4	+ 7.7	1 18 0	+ 8.3	−12.2	3 0 0	−144.2	+ 6.8
0 12 40	139.6	7.3	1 18 40	− 0.2	12.2	3 0 40	139.3	7.3
0 13 20	144.5	6.8	1 19 20	8.8	12.2	3 1 20	134.1	7.8
0 14 0	149.0	6.3	1 20 0	17.3	12.1	3 2 0	128.5	8.2
0 14 40	153.2	5.7	1 20 40	25.7	12.1	3 2 40	122.6	8.6
0 15 20	157.0	5.2	1 21 20	34.1	12.0	3 3 20	116.4	9.0
0 16 0	+160.5	+ 4.7	1 22 0	− 42.4	−11.8	3 4 0	−109.9	+ 9.4
0 16 40	163.6	4.1	1 22 40	50.6	11.7	3 4 40	103.1	9.8
0 17 20	166.3	3.5	1 23 20	58.7	11.5	3 5 20	96.1	10.1
0 18 0	168.6	3.0	2 0 0	66.7	11.3	3 6 0	88.9	10.5
0 18 40	170.5	2.4	2 0 40	74.5	11.0	3 6 40	81.5	10.8
0 19 20	171.9	1.8	2 1 20	82.1	10.7	3 7 20	73.9	11.0
0 20 0	+172.9	+ 1.2	2 2 0	− 89.5	−10.4	3 8 0	− 66.1	+11.3
0 20 40	173.6	+ 0.6	2 2 40	96.7	10.1	3 8 40	58.1	11.5
0 21 20	173.8	0.0	2 3 20	103.7	9.8	3 9 20	50.0	11.7
0 22 0	173.6	− 0.6	2 4 0	110.4	9.4	3 10 0	41.8	11.8
0 22 40	172.9	1.2	2 4 40	116.8	9.0	3 10 40	33.5	12.0
0 23 20	171.8	1.8	2 5 20	123.0	8.6	3 11 20	25.1	12.1
1 0 0	+170.4	− 2.4	2 6 0	−128.9	− 8.2	3 12 0	− 16.6	+12.1
1 0 40	168.5	3.0	2 6 40	134.5	7.7	3 12 40	− 8.1	12.2
1 1 20	166.2	3.5	2 7 20	139.7	7.2	3 13 20	+ 0.4	12.2
1 2 0	163.5	4.1	2 8 0	144.6	6.7	3 14 0	9.0	12.2
1 2 40	160.4	4 7	2 8 40	149.1	6.2	3 14 40	17.5	12.1
1 3 20	157.0	5.2	2 9 20	153.3	5.7	3 15 20	26.0	12.1
1 4 0	+153.2	− 5.8	2 10 0	−157.1	− 5.2	3 16 0	+ 34.4	+12.0
1 4 40	149.0	6.3	2 10 40	160.6	4 6			
1 5 20	+144.4	− 6.8	2 11 20	−163 7	− 4 1			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d h m	″	″	d h m	″	″	h d m	″	″
0 0 0	+ 0.0	+17.4	2 12 0	+225.4	−10.1	5 0 0	−262.3	− 5.6
0 1 20	13.5	17.4	2 13 20	217.3	10.8	5 1 20	266.4	4.8
0 2 40	26.9	17.3	2 14 40	208.6	11.5	5 2 40	269.8	4.0
0 4 0	40.3	17.2	2 16 0	199.5	12.1	5 4 0	272.6	3.2
0 5 20	53.6	17.1	2 17 20	189.9	12.7	5 5 20	274.7	2.3
0 6 40	66.8	16.9	2 18 40	179.9	13.3	5 6 40	276.2	1.5
0 8 0	+ 79.8	+16.7	2 20 0	+169.4	−13.8	5 8 0	−277.0	− 0.6
0 9 20	92.7	16.4	2 21 20	158.5	14.3	5 9 20	277.2	+ 0.2
0 10 40	105.3	16.1	2 22 40	147.2	14.8	5 10 40	276.7	1.1
0 12 0	117.6	15.8	3 0 0	135.6	15.2	5 12 0	275.5	1.9
0 13 20	129.7	15.4	3 1 20	123.7	15.6	5 13 20	273.7	2.7
0 14 40	141.5	15.0	3 2 40	111.5	16.0	5 14 40	271.2	3.6
0 16 0	+153.0	+14.5	3 4 0	+ 99.0	−16.3	5 16 0	−268.1	+ 4.4
0 17 20	164.1	14.0	3 5 20	86.3	16.6	5 17 20	264.4	5.2
0 18 40	174.7	13.5	3 6 40	73.3	16.8	5 18 40	260.1	6.0
0 20 0	184.9	13.0	3 8 0	60.2	17.0	5 20 0	255.1	6.8
0 21 20	194.7	12.4	3 9 20	47.0	17.2	5 21 20	249.5	7.6
0 22 40	204.1	11.8	3 10 40	33.6	17.3	5 22 40	243.3	8.3
1 0 0	+213.0	+11.1	3 12 0	+ 20.2	−17.4	6 0 0	−236.6	+ 9.1
1 1 20	221.4	10.5	3 13 20	+ 6.7	17.4	6 1 20	229.3	9.8
1 2 40	229.3	9.8	3 14 40	− 6.8	17.4	6 2 40	221.4	10.5
1 4 0	236.6	9.1	3 16 0	20.3	17.4	6 4 0	213.0	11.1
1 5 20	243.3	8.3	3 17 20	33.7	17.3	6 5 20	204.1	11.8
1 6 40	249.5	7.6	3 18 40	47.1	17.2	6 6 40	194.7	12.4
1 8 0	+255.1	+ 6.8	3 20 0	− 60.3	−17.0	6 8 0	−184.9	+13.0
1 9 20	260.0	6.0	3 21 20	73.4	16.8	6 9 20	174.7	13.5
1 10 40	264.3	5.2	3 22 40	86.3	16.6	6 10 40	164.1	14.0
1 12 0	268.0	4.4	4 0 0	99.0	16.3	6 12 0	153.0	14.5
1 13 20	271.1	3.6	4 1 20	111.5	16.0	6 13 20	141.5	15.0
1 14 40	273.6	2.7	4 2 40	123.7	15.6	6 14 40	129.7	15.4
1 16 0	+275.5	+ 1.9	4 4 0	−135.7	−15.2	6 16 0	−117.6	+15.8
1 17 20	276.7	1.1	4 5 20	147.2	14.8	6 17 20	105.2	16.1
1 18 40	277.2	+ 0.2	4 6 40	158.4	14.3	6 18 40	92.6	16.4
1 20 0	277.0	− 0.6	4 8 0	169.3	13.8	6 20 0	79.8	16.7
1 21 20	276.2	1.5	4 9 20	179.8	13.3	6 21 20	66.8	16.9
1 22 40	274.7	2.3	4 10 40	189.9	12.7	6 22 40	53.6	17.1
2 0 0	+272.6	− 3.2	4 12 0	−199.5	−12.1	7 0 0	− 40.3	+17.2
2 1 20	269.8	4.0	4 13 20	208.6	11.5	7 1 20	26.9	17.3
2 2 40	266.4	4.8	4 14 40	217.3	10.8	7 2 40	− 13.4	17.4
2 4 0	262.3	5.6	4 16 0	225.5	10.1	7 4 0	+ 0.1	17.4
2 5 20	257.6	6.4	4 17 20	233.1	9.4	7 5 20	13.6	17.4
2 6 40	252.3	7.2	4 18 40	240.1	8.7	7 6 40	27.0	17.3
2 8 0	+246.4	− 8.0	4 20 0	−246.5	− 8.0	7 8 0	+ 40.4	+17.2
2 9 20	240.0	8.7	4 21 20	252.3	7.2			
2 10 40	+233.0	− 9.4	4 22 40	−257.6	− 6.4			

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t	*x′*	*y′*	*t*	*x′*	*y′*	*t*	*x′*	*y′*
d h	″	″	d h	″	″	d h	″	″
0 0	+ 0.0	+34.8	5 18	+406.2	−19.3	11 12	−449.0	−13.5
0 3	22.8	34.8	5 21	393.1	20.6	11 15	457.4	12.0
0 6	45.6	34.7	6 0	379.2	21.9	11 18	464.8	10.5
0 9	68.3	34.5	6 3	364.4	23.1	11 21	471.2	8.9
0 12	90.9	34.2	6 6	348.8	24.3	12 0	476.5	7.3
0 15	113.2	33.9	6 9	332.5	25.5	12 3	480.8	5.7
0 18	+135.3	+33.5	6 12	+315.4	−26.6	12 6	−484.0	− 4.1
0 21	157.1	33.0	6 15	297.6	27.6	12 9	486.2	2.5
1 0	178.5	32.4	6 18	279.2	28.5	12 12	487.3	− 0.8
1 3	199.6	31.8	6 21	260.2	29.4	12 15	487.3	+ 0.8
1 6	220.3	31.1	7 0	240.6	30.3	12 18	486.3	2.4
1 9	240.4	30.3	7 3	220.5	31.1	12 21	484.2	4.0
1 12	+260.0	+29.5	7 6	+199.9	−31.8	13 0	−480.9	+ 5.7
1 15	279.0	28.6	7 9	178.8	32.4	13 3	476.6	7.3
1 18	297.4	27.6	7 12	157.4	33.0	13 6	471.3	8.9
1 21	315.2	26.6	7 15	135.6	33.5	13 9	465.0	10.5
2 0	332.3	25.5	7 18	113.5	33.9	13 12	457.6	12.0
2 3	348.6	24.3	7 21	91.2	34.2	13 15	449.3	13.5
2 6	+364.1	+23.1	8 0	+ 68.7	−34.5	13 18	−440.0	+15.0
2 9	378.9	21.9	8 3	46.0	34.7	13 21	429.7	16.4
2 12	392.9	20.6	8 6	23.2	34.8	14 0	418.5	17.8
2 15	406.0	19.3	8 9	+ 0.3	34.8	14 3	406.3	19.2
2 18	418.2	17.9	8 12	− 22.5	34.8	14 6	393.2	20.6
2 21	429.5	16.5	8 15	45.3	34.7	14 9	379.3	21.9
3 0	+439.8	+15.0	8 18	− 68.0	−34.5	14 12	+364.6	+23.1
3 3	449.1	13.5	8 21	90.5	34.2	14 15	349.1	24.3
3 6	457.5	12.0	9 0	112.9	33.9	14 18	332.8	25.4
3 9	464.9	10.5	9 3	135.0	33.5	14 21	315.7	26.5
3 12	471.3	8.9	9 6	156.8	33.0	15 0	298.0	27.5
3 15	476.6	7.3	9 9	178.2	32.4	15 3	279.6	28.5
3 18	+480.8	+ 5.7	9 12	−199.3	−31.8	15 6	−260.5	+29.4
3 21	484.0	4.1	9 15	220.0	31.1	15 9	240.9	30.3
4 0	486.2	2.5	9 18	240.1	30.3	15 12	220.8	31.1
4 3	487.3	+ 0.8	9 21	259.7	29.5	15 15	200.2	31.8
4 6	487.3	− 0.8	10 0	278.7	28.6	15 18	179.2	32.4
4 9	486.3	2.4	10 3	297.2	27.6	15 21	157.7	33.0
4 12	+484.2	− 4.1	10 6	−315.0	−26.6	16 0	−135.9	+33.5
4 15	480.9	5.7	10 9	332.1	25.5	16 3	113.8	33.9
4 18	476.6	7.3	10 12	348.4	24.4	16 6	91.5	34.2
4 21	471.3	8.9	10 15	363.9	23.2	16 9	69.0	34.5
5 0	465.0	10.4	10 18	378.7	21.9	16 12	46.3	34.7
5 3	457.7	12.0	10 21	392.7	20.6	16 15	23.5	34.8
5 6	+449.3	−13.5	11 0	−405.8	−19.3	16 18	− 0.6	+34.8
5 9	439.9	15.0	11 3	418.0	17.9	16 21	+ 22.2	34.8
5 12	429.6	16.4	11 6	429.3	16.5	17 0	+ 45.0	+34.7
5 15	+418.4	−17.9	11 9	−439.6	−15.0			

SATELLITE I.

Date, 1878.	At geocentric superior conjunction.			At time of eclipse.		Date, 1878.	At geocentric superior conjunction.			At time of eclipse.	
	Factor for x′.	Factor for y′.	p.	x.	y.		Factor for x′.	Factor for y′.	p.	x.	y.
Feb. 4	0.859	-0.324	-10° 52′.7	-23″	-2″	July 24	1.271	-0.200	-14° 52′.6	+23″	-1″
11	0.867	0.314	11 31.7	25	2	31	1.269	0.205	14 32.3	27	1
18	0.876	0.303	12 8.8	26	2	Aug. 7	1.263	0.209	14 12.5	30	1
25	0.886	0.292	12 44.1	28	2	14	1.253	0.213	13 53.9	33	1
Mar. 4	0.898	0.281	13 17.5	29	2	21	1.238	0.216	13 37.0	36	1
11	0.912	-0.271	-13 48.8	-31	-2	28	1.220	-0.218	-13 22.6	+38	-1
19	0.927	0.261	14 17.7	33	2	Sept. 4	1.200	0.218	13 11.4	40	1
26	0.944	0.251	14 44.2	35	2	11	1.178	0.217	13 3.7	41	1
Apr. 2	0.962	0.242	15 8.1	36	2	18	1.155	0.214	12 59.7	42	1
9	0.981	0.233	15 29.4	38	2	26	1.131	0.210	12 59.5	42	1
16	1.002	-0.225	-15 47.9	-39	-1	Oct. 3	1.106	-0.205	-13 3.2	+42	-1
23	1.024	0.217	16 3.6	40	1	10	1.082	0.198	13 10.7	42	1
30	1.048	0.209	16 16.3	41	1	17	1.058	0.190	13 21.7	41	1
May 7	1.072	0.203	16 25.9	41	1	24	1.035	0.181	13 36.2	40	1
14	1.097	0.197	16 32.3	42	1	31	1.013	0.172	13 53.7	39	1
21	1.123	-0.192	-16 35.5	-42	-1	Nov. 7	0.992	-0.162	-14 14.0	+38	-1
28	1.148	0.188	16 35 6	42	1	14	0.973	0.150	14 36.9	36	1
June 4	1.171	0.186	16 32.4	41	1	21	0.955	0.138	15 1.8	35	1
11	1.193	0.185	16 25.9	40	1	28	0.939	0.126	15 28.4	33	1
19	1.214	0.185	16 16.2	38	1	Dec. 5	0.924	0.113	15 56.4	32	1
26	1.233	-0.186	-16 3.8	-36	-1	12	0.911	-0.100	-16 25.5	+30	-1
July 3	1.249	0.189	15 48.8	33	1	20	0.900	0.086	16 55.5	28	1
10	1.260	0.192	15 31.5	30	1	27	0.890	-0.072	-17 25.7	+26	-1
17	1.268	-0.196	-15 12.5	-27	-1						

SATELLITE II.

Date. 1878.	At geocentric superior conjunction.			At time of eclipse.		Date. 1878.	At geocentric superior conjunction.			At time of eclipse.	
	Factor for x′.	Factor for y′.	p.	x.	y.		Factor for x′.	Factor for y′.	p.	x.	y.
Feb. 4	0.860	-0.197	-10° 42′.3	-27″	-2″	July 25	1.271	-0.073	-14° 30′.7	+24″	-1″
12	0.867	0.188	11 20.5	30	2	Aug. 1	1.269	0.076	14 10.5	30	1
19	0.876	0.179	11 57.0	33	2	8	1.262	0.079	13 51.0	35	1
26	0.877	0.170	12 31.7	36	2	15	1.251	0.082	13 32.7	40	1
Mar. 5	0.899	0.162	13 4.5	38	2	22	1.236	0.085	13 16.3	44	1
12	0.913	-0.153	-13 35.2	-41	-2	29	1.218	-0.087	-13 2.6	+48	-1
19	0.929	0.145	14 3.4	43	2	Sept. 6	1.198	0.089	12 52.0	51	1
26	0.946	0.136	14 29.2	45	2	13	1.175	0.089	12 44.8	53	1
Apr. 2	0.964	0.128	14 52.6	47	2	20	1.151	0.089	12 41.3	55	1
9	0.984	0.120	15 13.3	49	2	27	1.127	0.087	12 41.7	56	1
17	1.005	-0.113	-15 31.2	-51	-1	Oct. 4	1.102	-0.085	-12 46.0	+56	-1
24	1.028	0.106	15 46.3	53	1	11	1.077	0.082	12 54.0	56	1
May 1	1.051	0.099	15 58.4	54	1	18	1.053	0.079	13 5.4	55	1
8	1.075	0.092	16 7.4	55	1	25	1.030	0.074	13 20.2	54	1
15	1.100	0.086	16 13.3	55	1	Nov. 1	1.009	0.069	13 38.1	52	1
22	1.125	-0.081	-16 16.0	-54	-1	8	0.988	-0.062	-13 58.6	+50	+1
29	1.150	0.076	16 15.6	53	1	16	0.969	0.055	14 21.6	48	1
Jnne 5	1.174	0.073	16 11.0	51	1	23	0.952	0.048	14 46.6	46	1
12	1.197	0.070	16 5.0	49	1	30	0.936	0.041	15 13.2	43	0
19	1.218	0.068	15 55.0	46	1	Dec. 7	0.921	0.033	15 41.1	40	0
27	1.236	-0.067	-15 42.3	-43	-1	14	0.908	-0.025	-16 10.1	+38	-0
July 4	1.251	0.067	15 27.1	39	1	21	0.897	0.016	16 39.8	36	0
11	1.261	0.068	15 9.6	34	1	28	0.888	-0.007	-17 9.8	+33	-0
18	1.268	-0.070	-14 50.6	-28	-1						

SATELLITE III.

Date, 1878.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x'.	Factor for y'.	p.	Dis.		Reap.	
				x.	y.	x.	y.
			° ′	″	″	″	″
Feb. 7	0.862	-0.353	-11 5.1	-34	-6	. .	. .
14	0.870	0.344	11 44.2	39	6	. .	. .
21	0.880	0.334	12 21.4	43	6	. .	. .
Mar. 1	0.892	0.324	12 56.6	47	6	-18	-6
8	0.905	0.315	13 29.7	51	5	22	5
15	0.920	-0.306	-14 0.5	-55	-5	-26	-5
22	0.936	0.298	14 28.9	59	5	29	5
29	0.954	0.290	14 54.7	63	5	32	5
Apr. 5	0.973	0.282	15 17.8	66	5	34	5
13	0.993	0.275	15 38.1	69	5	36	5
20	1.015	-0.268	-15 55.4	-71	-4	-38	-4
27	1.038	0.262	16 9.7	73	4	39	4
May 4	1.062	0.256	16 20.9	74	4	39	4
11	1.087	0.252	16 28.9	75	4	39	4
18	1.113	0.248	16 33.5	75	4	38	4
26	1.138	-0.245	-16 34.8	-74	-4	-35	-4
June 2	1.162	0.243	16 32.7	72	4	32	4
9	1.185	0.243	16 27.3	69	4	27	4
16	1.207	0.244	16 18.7	64	4	-22	-4
23	1.227	-0.246	-16 7.0	-58	-4	. .	. .
30	1.244	0.249	15 52.5	51	4	. .	. .
July 7	1.257	0.252	15 35.5	43	4	. .	. .
15	1.266	-0.256	-15 16.8	-34	-4	. .	. .
July 22	1.270	-0.260	-14 56.7	-25	-4	. .	. .
29	1.270	0.265	14 36.0	. .	. .	+28	-4
Aug. 5	1.265	0.269	14 15.6	. .	. .	37	4
12	1.256	0.272	13 56.2	. .	. .	46	4
19	1.243	0.274	13 38.5	. .	. .	54	4
26	1.226	-0.275	-13 23.3	. .	. .	+61	-4
Sept. 3	1.206	0.274	13 11.1	+24	-4	66	4
10	1.184	0.272	13 2.3	29	4	70	4
17	1.161	0.268	12 57.3	33	4	73	4
24	1.137	0.263	12 56.2	36	4	76	4
Oct. 1	1.112	-0.257	-12 59.2	+38	-4	+77	-4
8	1.086	0.250	13 6.1	39	4	77	4
16	1.061	0.242	13 16.7	39	4	76	4
23	1.038	0.232	13 30.9	38	4	74	4
30	1.016	0.222	13 48.4	37	4	72	4
Nov. 6	0.995	-0.211	-14 8.8	+35	-4	+69	-4
13	0.975	0.199	14 31.7	32	4	66	4
20	0.957	0.187	14 56.9	29	3	63	3
28	0.941	0.174	15 24.1	26	3	59	3
Dec. 5	0.926	-0.160	-15 52.7	+23	3	+55	-3
12	0.912	0.146	16 22.4	+19	-3	51	3
19	0.900	0.132	16 52.9	. .	. .	47	2
26	0.890	-0.118	-17 23.9	. .	. .	+43	-2

SATELLITE IV.

Date, 1878.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x'.	Factor for y'.	p.	Dis.		Reap.	
				x.	y.	x.	y.
			° ′	″	″	″	″
Feb. 12	0.868	-0.277	-11 17.7	-52	-10	-29	-10
Mar. 1	0.892	0.260	12 42.8	69	9	45	9
18	0.926	0.244	13 56.1	85	8	60	8
Apr. 4	0.967	0.229	14 55.9	100	8	72	8
20	1.016	0.216	15 40.3	110	7	81	7
May 7	1.073	-0.205	-16 8.2	116	-7	-83	- 7
24	1.132	0.197	16 18.3	113	7	79	7
June 9	1.188	0.193	16 10.4	102	7	64	7
26	1.234	0.194	15 45.1	79	7	-39	- 7
July 13	1.264	-0.198	-15 5.8	-47	-7	. .	. .
July 29	1.270	-0.204	-14 18.9	. .	. .	+33	-7
Aug. 15	1.251	0.208	13 33.4	+26	-7	69	7
31	1.212	0.209	12 58.6	55	7	98	7
Sept. 17	1.160	0.204	12 41.5	73	7	114	7
Oct. 4	1.103	0.194	13 45.6	81	7	119	7
21	1.046	-0.179	-13 10.5	+81	-6	118	-6
Nov. 6	0.994	0.161	13 53.7	72	6	107	6
23	0.951	0.140	14 50.9	61	5	95	5
Dec. 10	0.915	0.116	15 51.7	46	4	79	4
27	0.889	-0.091	-17 9.4	+30	-3	+62	-3

THE APPARENT ELEMENTS OF SATURN'S RING.

Washington Mean Noon.		*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Ecliptic,
Jan.	0	37″.56	1″.96	+5° 19′.0	+2° 59′.5	+0° 33′.0	318° 26′.6	275° 37′.5
	20	36.55	1.37	5 11.0	+2 8.7	+0 15.2	316 56.9	274 6.1
Feb.	9	35.86	0.69	5 0.9	+1 6.4	—0 2.7	315 5.2	272 14.5
March	1	35.48	0.00	4 49.3	—0 0.3	—0 20.6	313 0.1	270 9.5
	21	35.45	0.72	4 36.9	—1 10.0	—0 38.5	310 49.5	267 59.0
April	10	35.75	1.41	4 24.4	—2 15.3	—0 56.4	308 41.1	265 50.7
	30	36.38	2.05	4 12.7	—3 14.3	—1 14.4	306 42.8	263 52.5
May	20	37.30	2.63	4 2.5	—4 2.4	—1 32.4	305 1.9	262 11.7
June	9	38.47	3.02	3 54.6	—4 6.6	—1 50.4	303 45.3	260 55.2
	29	39.82	3.40	3 49.9	—4 54.3	—2 8.4	302 59.2	260 9.2
July	19	41.22	3.52	3 48.7	—4 53.9	—2 26.4	302 47.9	259 57.0
Aug.	8	42.50	3.41	3 51.2	—4 35.9	—2 44.4	303 12.2	260 21.4
	28	43.47	3.07	3 57.0	—4 3.0	—3 2.4	304 7.8	261 17.1
Sept.	17	43.92	2.57	4 4.8	—3 21.2	—3 20.4	305 24.2	262 33.6
Oct.	7	43.77	2.02	4 13.0	—2 38.7	—3 38.4	306 45.5	263 55.0
	27	43.03	1.56	4 19.9	—2 4.6	—3 56.4	307 46.6	265 6.2
Nov.	16	41.86	1.29	4 24.1	—1 46.2	—4 14.4	308 37.3	265 43.0
Dec.	6	40.47	1.20	4 24.8	—1 47.3	—4 32.4	308 44.7	265 57.5
	26	39.08	1.46	4 21.8	—2 8.2	—4 50.4	308 14.6	265 26.5
	31	38.75	1.54	+4 20.4	—2 16.5	—4 54.9	308 1.4	265 14.3

Factors which are to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring =0.8801 log Factor=9.9445
The outer ellipse of the inner Ring =0.8599 " =9.9344
The inner ellipse of the inner Ring =0.6650 " =9.8228
The inner ellipse of Bond's dusky Ring=0.5486 " =9.7392

Note. The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1878.		Venus.	Mars.	1878.		Venus.	Mars.
January	1	.378	.875	July	30	.836	.993
	31	.129	.887	August	29	.904	.999
March	2	.043	.906	September	28	.954	.999
April	1	.295	.927	October	28	.986	.995
May	1	.491	.948	November	27	1.000	.984
	31	.633	.966	December	27	.996	.969
June	30	.747	.982				

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	'
Jan.	2	23	20	☌ ♃ ☾ ..... ♃ +	3	8
	3	19	44	□ ♂ ☉		
	3	22	36	☌ ☿ ☾ ..... ☿ +	3	34
	4	1	50	♀ in ☊		
	4	13	57	☿ in Perihelion.		
	4	21	26	☌ ♃ ☉		
	6	19	46	☌ ♀ ☾ ..... ♀ —	0	23
	8	5	40	☌ ♄ ☾ ..... ♄ —	4	35
	10	3	52	☌ ☿ ☉ Inf.		
	10	22	38	☌ ♂ ☾ ..... ♂ —	4	17
	12	8	12	☌ ♆ ☾ ..... ♆ —	7	15
	12	17	35	☌ ☿ ♃ ..... ☿ +	3	30
	14	4	–	♆ stationary.		
	14	21	26	☿ greatest Hel. Lat. N.		
	16	–	–	♀ at greatest brilliancy.		
	20	7	45	☌ ♅ ☾ ..... ♅ +	1	29
	21	10	–	☿ stationary.		
	24	2	21	□ ♆ ☉		
	30	7	48	☌ ☿ ☾ ..... ☿ +	4	33
	30	15	–	♀ stationary.		
	30	18	16	☌ ♃ ☾ ..... ♃ +	2	39
Feb.	1	–	–	☉ eclipsed, invis. at Wash.		
	2	11	50	☿ greatest elong. W.	25	27
	3	17	34	☌ ♀ ☾ ..... ♀ +	4	54
	4	18	29	☌ ♄ ☾ ..... ♄ —	4	52
	6	–	–	Disapp. of Saturn's Ring.		
	6	0	23	☌ ☿ ♃ ..... ☿ +	0	23
	6	13	51	♀ in Perihelion.		
	7	9	9	☿ in ☋		
	8	13	57	☌ ♆ ♂ ..... ♆ —	2	46
	8	16	26	☌ ♆ ☾ ..... ♆ —	7	18
	8	16	34	☌ ♂ ☾ ..... ♂ —	4	32
	15	12	52	☍ ♅ ☉		
	16	–	–	☾ eclip'd, partly vis. at Wash.		
	16	16	47	☌ ♅ ☾ ..... ♅ +	1	22
	17	13	33	☿ in Aphelion.		
	20	8	26	☌ ♀ ☉ Inf.		
	27	11	49	☌ ♃ ☾ ..... ♃ +	2	7
	28	13	42	♀ greatest Hel. Lat. N.		
Mar.	1	–	–	Reapp, of Saturn's Ring.		
	1	19	18	☌ ♀ ☾ ..... ♀ +	8	46
	2	2	36	☌ ☿ ☾ ..... ☿ —	2	48
	4	7	22	☌ ♄ ☾ ..... ♄ —	5	5
	7	23	50	☌ ♆ ☾ ..... ♆ —	7	13
	9	9	8	☌ ♂ ☾ ..... ♂ —	4	16
	9	23	26	☿ greatest Hel. Lat. S.		
	12	20	–	♀ stationary.		
	13	0	40	☌ ♄ ☉		
	16	2	12	☌ ♅ ☾ ..... ♅ +	1	17
	17	0	27	☌ ☿ ♄ ..... ☿ +	0	17
	20	0	34	☉ enters ♈, spring com.		
	20	8	54	☌ ☿ ☉ Sup.		
Mar.	27	3	56	☌ ♃ ☾ ..... ♃ +	1	31
	28	23	14	☿ in ☊		
	28	–	–	♀ at greatest brilliancy.		
	29	8	50	☌ ♀ ☾ ..... ♀ +	3	30
	31	20	53	☌ ♄ ☾ ..... ♄ —	5	27
April	2	13	12	☿ in Perihelion.		
	3	14	3	☌ ☿ ☾ ..... ☿ —	3	56
	4	7	10	☌ ♆ ☾ ..... ♆ —	7	5
	7	0	5	☌ ♂ ☾ ..... ♂ —	3	32
	9	1	57	☌ ♆ ☿ ..... ♆ —	3	59
	12	10	21	☌ ♅ ☾ ..... ♅ +	1	21
	12	20	41	☿ greatest Hel. Lat. N.		
	14	17	35	☿ greatest elong. E.	19	51
	23	18	13	☌ ♃ ☾ ..... ♃ +	0	54
	25	11	12	□ ♃ ☉		
	25	15	–	☿ stationary.		
	25	15	14	♀ in ☋		
	26	22	48	☌ ♆ ☉		
	27	18	54	☌ ♀ ☾ ..... ♀ —	3	19
	28	10	12	☌ ♄ ☾ ..... ♄ —	5	52
May	1	8	7	♀ greatest elong. W.	46	7
	1	15	20	☌ ♆ ☾ ..... ♆ —	7	3
	2	5	–	♅ stationary.		
	2	9	54	☌ ☿ ☾ ..... ☿ —	4	4
	5	14	7	☌ ♂ ☾ ..... ♂ —	2	27
	5	17	49	☌ ♀ ♄ ..... ♀ +	1	15
	6	1	58	☌ ☿ ☉ Inf. and transit.		
	6	8	25	☿ in ☋		
	9	17	1	☌ ♅ ☾ ..... ♅ +	1	34
	15	17	55	□ ♅ ☉		
	16	12	49	☿ in Aphelion.		
	19	11	21	☿ stationary.		
	21	5	36	☌ ♃ ☾ ..... ♃ +	0	24
	25	0	10	♃ stationary.		
	25	22	59	☌ ♄ ☾ ..... ♄ —	6	22
	27	18	58	☌ ♀ ☾ ..... ♀ —	7	23
	29	0	36	☌ ♆ ☾ ..... ♆ —	7	7
	29	13	58	☌ ☿ ☾ ..... ☿ —	9	9
	29	18	20	♀ in Aphelion.		
June	1	21	7	☿ greatest elong. W.	24	17
	3	4	32	☌ ♂ ☾ ..... ♂ —	1	4
	5	22	41	☿ greatest Hel. Lat. S.		
	5	23	27	☌ ♅ ☾ ..... ♅ +	1	52
	11	3	6	☌ ♆ ♀ ..... ♆ +	0	39
	17	12	51	☌ ♃ ☾ ..... ♃ +	0	11
	20	20	55	☉ enters ♋, summer com.		
	21	11	54	♀ greatest Hel. Lat. S.		
	22	10	23	☌ ♄ ☾ ..... ♄ —	6	50
	23	13	32	□ ♄ ☉		
	24	22	29	☿ in ☊		
	25	10	30	☌ ♆ ☾ ..... ♆ —	7	17
	25	19	24	♂ greatest Hel. Lat. N.		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
June	26	18	5	☌ ♀ ☾	♀ −	7	23
	29	9	0	☌ ☿ ☾	☿ −	2	40
	29	12	28	☿ in Perihelion.			
July	1	15	12	☉ in Apogee.			
	1	18	54	☌ ♂ ☾	♂ +	0	31
	3	7	26	☌ ♅ ☾	♅ +	2	7
	3	21	0	☌ ☿ ☉ Sup.			
	9	19	57	☿ greatest Hel. Lat. N.			
	14	0	–	♄ stationary.			
	14	15	46	☌ ♃ ☾	♃ +	0	18
	19	19	13	☌ ♄ ☾	♄ −	7	8
	22	11	20	☌ ☿ ♂	☿ +	0	12
	22	19	58	☌ ♆ ☾	♆ −	7	25
	24	16	35	☍ ♃ ☉			
	26	15	57	☌ ♀ ☾	♀ −	4	35
	28	7	59	☌ ♅ ☿	♅ +	0	1
	29	–	–	☉ eclipsed, vis. at Wash.			
	30	10	36	☌ ♂ ☾	♂ +	2	19
	30	15	42	♂ in Aphelion.			
	30	17	59	☌ ♅ ☾	♅ +	2	19
	31	0	9	☌ ☿ ☾	☿ +	2	17
Aug.	1	13	28	□ ♆ ☉			
	2	7	41	☿ in ☋			
	6	23	13	☌ ♅ ♂	♅ −	0	26
	10	16	8	☌ ♃ ☾	♃ +	0	34
	12	–	–	☾ eclip'd, partly vis. at Wash.			
	12	10	–	♆ stationary.			
	12	12	5	☿ in Aphelion.			
	13	7	3	☿ greatest elong. E.		27	26
	16	0	49	☌ ♄ ☾	♄ −	7	12
	16	18	40	♀ in ☊			
	19	3	56	☌ ♆ ☾	♆ −	7	27
	22	10	23	☌ ♅ ☉			
	25	16	2	☌ ♀ ☾	♀ −	0	9
	27	6	–	☿ stationary.			
	27	6	50	☌ ♅ ☾	♅ +	2	28
	28	3	8	☌ ♂ ☾	♂ +	3	59
	28	21	47	☌ ☿ ☾	☿ −	0	46
Sept.	1	21	57	☿ greatest Hel. Lat. S.			
	6	15	31	☌ ☿ ♂	☿ −	5	27
	6	17	22	☌ ♃ ☾	♃ +	0	43
	9	19	38	☌ ☿ ☉ Inf.			
	12	3	41	☌ ♄ ☾	♄ −	7	7
	12	10	49	☌ ♅ ♀	♅ −	0	23
	15	9	57	☌ ♆ ☾	♆ −	7	21
	17	19	41	☌ ♂ ☉			
	19	0	–	☿ stationary.			
	19	2	0	♀ in Perihelion.			
	20	21	45	☿ in ☊			
	21	22	50	☍ ♄ ☉			
	22	11	18	☉ enters ♎, autumn com.			
	22	21	–	♃ stationary.			
	23	20	29	☌ ♅ ☾	♅ +	2	41
Sept.	24	17	29	☌ ☿ ♀	☿ −	0	27
	24	17	41	☌ ☿ ☾	☿ +	4	6
	24	17	43	☌ ♀ ☾	♀ +	4	34
	25	11	22	☿ greatest elong. W.		17	53
	25	11	44	☿ in Perihelion.			
	25	20	3	☌ ♂ ☾	♂ +	5	16
	29	21	3	☌ ☿ ♀	☿ +	0	17
Oct.	3	22	48	☌ ♃ ☾	♃ +	0	34
	5	19	13	☿ greatest Hel. Lat. N.			
	9	5	28	☌ ♄ ☾	♄ −	6	59
	11	6	26	☿ greatest Hel. Lat. N.			
	12	3	16	☌ ☿ ♂	☿ +	1	0
	12	14	37	☌ ♆ ☾	♆ −	7	14
	20	16	9	☌ ♀ ♂	♀ +	0	43
	21	8	51	☌ ♅ ☾	♅ +	3	0
	21	10	45	□ ♃ ☉			
	24	5	58	☌ ☿ ☉ Sup.			
	24	12	52	☌ ♂ ☾	♂ +	5	54
	24	16	44	☌ ♀ ☾	♀ +	6	40
	25	10	35	☌ ☿ ☾	☿ +	5	46
	29	6	57	☿ in ☋			
	31	5	41	☍ ♆ ☉			
	31	10	8	☌ ♃ ☾	♃ +	0	7
Nov.	5	8	35	☌ ♄ ☾	♄ −	6	58
	8	11	21	☿ in Aphelion.			
	8	19	19	☌ ♆ ☾	♆ −	7	12
	17	18	8	☌ ♅ ☾	♅ +	3	24
	22	5	12	☌ ♂ ☾	♂ +	5	49
	23	13	8	☌ ♀ ☾	♀ +	5	14
	24	22	36	☌ ☿ ☾	☿ +	1	17
	25	19	13	□ ♅ ☉			
	28	2	57	☌ ♃ ☾	♃ −	0	31
	28	16	–	♄ stationary.			
	28	21	13	☿ greatest Hel. Lat. S.			
Dec.	2	14	51	☌ ♄ ☾	♄ −	7	5
	5	2	0	☌ ♀ ☉ Sup.			
	6	1	12	☌ ♆ ☾	♆ −	7	18
	6	7	54	♀ in ☋			
	7	19	8	☿ greatest elong. E.		20	50
	9	1	–	♅ stationary.			
	15	0	15	☌ ♅ ☾	♅ +	3	41
	15	22	–	☿ stationary.			
	17	18	20	□ ♄ ☉			
	17	21	0	☿ in ☊			
	20	21	2	☌ ♂ ☾	♂ +	5	3
	21	5	33	☉ enters ♑, winter com.			
	22	10	59	☿ in Perihelion.			
	23	12	22	☌ ♀ ☾	♀ +	1	45
	23	12	25	☌ ☿ ☾	☿ +	4	14
	23	12	39	☌ ☿ ♀	☿ +	2	28
	25	8	41	☌ ☿ ☉ Inf.			
	25	23	18	☌ ♃ ☾	♃ −	1	13
	30	0	47	☌ ♄ ☾	♄ −	7	14

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(*North Latitudes and West Longitudes are considered as positive.*)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
*Åbo, ...	+60 26 56.8	— 6 37 20.32	—.2759296	260 39 55.2
Albany, ...	+42 39 49.5	— 0 13 12.87	—.0091767	356 41 47.0
Allegheny, . . .	+40 27 36.0	+ 0 11 50.66	+.0082252	2 57 39.9
Altona, ...	+53 32 45.3	— 5 47 58.54	—.2416498	273 0 21.9
Ann Arbor, . . .	+42 16 48.0	+ 0 26 42.67	+.0185494	6 40 40.0
Armagh, ...	+54 21 12.7	— 4 41 36.92	—.1955662	289 35 46.2
Athens, ...	+37 58 20.0	— 6 43 7.58	—.2799488	259 13 6.3
Berlin, ...	+52 30 16.7	— 6 1 47.77	—.2512473	269 33 3.4
Bilk, ...	+51 12 25.0	— 5 35 17.77	—.2328445	276 10 33.4
*Bonn, ...	+50 43 45.0	— 5 36 36.02	—.2337502	275 50 59.7
Breslau, ...	+51 6 56.5	— 6 16 22.19	—.2613679	265 54 27.1
Brussels, ...	+50 51 10.7	— 5 25 41.29	—.2261723	278 34 40.7
Cambridge, (Eng.,)	+52 12 51.8	— 5 8 35.08	—.2142949	282 51 13.8
Cambridge, (Mass.,)	+42 22 48.1	— 0 23 41.54	—.0164530	354 4 36.9
Cape of Good Hope,	—33 56 3.2	— 6 22 8.09	—.2653711	264 27 58.7
Chicago, ...	+41 50 1.0	+ 0 42 14.26	+.0293317	10 33 33.9
Cincinnati, . . .	+39 6 26.5	+ 0 29 46.94	+.0206822	7 26 44.1
Christiania, . . .	+59 54 43.7	— 5 51 6.69	—.2438274	272 13 19.6
Clinton, ...	+43 3 16.5	— 0 6 35.08	—.0045727	358 21 13.8
Copenhagen, . . .	+55 41 13.6	— 5 58 31.05	—.2489703	270 22 14.3
Cordoba	—31 25 15.4	— 0 51 30.00	—.0357639	347 7 30.0
*Cracow, ...	+50 3 50.0	— 6 28 2.80	—.2694768	262 59 18.0
*Dorpat, ...	+58 22 47.0	— 6 55 6.02	—.2882641	256 13 29.7
Dublin, ...	+53 23 13.0	— 4 42 50.39	—.1964165	289 17 24.1
Durham, ...	+54 46 6.4	— 5 1 52.64	—.2096370	284 31 50.4
Edinburgh, . . .	+55 57 23.2	— 4 55 29.34	—.2052007	286 7 39.9
*Florence, ...	+43 46 40.8	— 5 53 15.12	—.2453139	271 41 13.2
*Geneva, . . .	+46 11 58.8	— 5 32 49.24	—.2311344	276 47 41.4
Georgetown, . . .	+38 54 26.2	+ 0 0 6.20	+.0000718	0 1 33.0
*Göttingen, . . .	+51 31 47.8	— 5 47 58.49	—.2416492	273 0 22.7
Gotha, ...	+50 56 37.5	— 5 51 3.39	—.2437892	272 14 9.2
Greenwich, . . .	+51 28 38.2	— 5 8 12.39	—.2140323	282 56 54.2
Hamburg, . . .	+53 33 7.0	— 5 48 5.95	—.2417355	272 58 30.8
*Helsingfors . . .	+60 9 42.6	— 6 48 1.32	—.2833486	257 59 40.2
Hudson, ...	+41 14 42.6	+ 0 17 32.06	+.0121766	4 23 0.9
Kasan, ...	+55 47 24.2	— 8 24 41.14	—.3504761	233 49 42.9
Königsberg, . . .	+54 42 50.6	— 6 30 11.87	—.2709707	262 27 0.2
*Kremsmünster, . .	+48 3 23.7	— 6 4 45.03	—.2532990	268 48 44.6
Leipsic, ...	+51 20 6.3	— 5 57 46.87	—.2484592	270 33 17.0
Leyden, ...	+52 9 20.3	— 5 26 8.57	—.2264881	278 27 51.5
Liverpool, . . .	+53 24 47.7	— 4 56 12.34	—.2056984	285 56 54.9
Madras, ...	+13 4 9.2	—10 29 9.67	—.4369175	202 42 35.0
Madrid, ...	+40 24 29.7	— 4 53 27.00	—.2037847	286 38 15.0
*Mannheim, . . .	+49 29 12.9	— 5 42 3.06	—.2375354	274 29 14.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Days.	Longitude from Washington in Arc.
	° ′ ″	h m s	d	° ′ ″
Markree, ...	+54 10 31.8	— 4 34 24.00	—.1905556	291 24 0.0
*Marseilles, . . .	+43 17 49.0	— 5 29 40.55	—.2289415	277 34 51.8
*Milan, ...	+45 28 0.7	— 5 44 58.20	—.2395625	273 45 27.0
*Modena, ...	+44 38 52.8	— 5 51 55.53	—.2443927	272 1 7.1
Moscow, ...	+55 45 19.8	— 7 38 29.29	—.3183946	245 22 40.7
*Munich, ...	+48 8 45.0	— 5 54 38.00	—.2462731	271 20 30.0
*Naples, ...	+40 51 46.6	— 6 5 10.95	—.2535990	268 42 15.8
New York, . . .	+40 43 48.5	— 0 12 15.47	—.0085124	356 56 0.8
Nicolajew, . . .	+46 58 20.6	— 7 16 6.53	—.3028534	250 58 22.1
*Olmütz, ...	+49 35 43.0	— 6 17 15.43	—.2619841	265 41 8.6
Oxford, ...	+51 45 35.5	— 5 3 9.79	—.2105300	284 12 33.2
*Padua, ...	+45 24 2.5	— 5 55 41.17	—.2470043	271 4 42.5
*Palermo, ...	+38 6 44.0	— 6 1 37.00	—.2511227	269 35 45.0
Paramatta, . . .	—33 48 49.8	—15 12 18.64	—.6335491	131 55 20.4
*Paris, ...	+48 50 11.0	— 5 17 33.02	—.2205211	280 36 44.7
Philadelphia,. . .	+39 57 7.5	— 0 7 33.64	—.0052505	358 6 35.4
*Prague, ...	+50 5 18.5	— 6 5 53.52	—.2540917	268 31 37.2
Pulkowa, ...	+59 46 18.1	— 7 9 31.06	—.2982757	252 37 14.1
Rome, ...	+41 53 53.7	— 5 58 8.53	—.2487098	270 27 52.1
*San Fernando, . .	+36 27 45.0	— 4 43 22.42	—.1967873	289 9 23.7
Santiago, ...	—33 26 42.0	— 0 25 30.00	—.0177083	353 37 30.0
Senftenberg, . . .	+50 5 10.1	— 6 14 3.00	—.2597570	266 29 15.0
*Speyer, ...	+49 18 55.4	— 5 41 58.00	—.2374769	274 30 30.0
*Stockholm, . . .	+59 20 33.8	— 6 20 26.35	—.2641939	264 53 24.7
St. Petersburg, . .	+59 56 29.7	— 7 9 25.87	—.2982161	252 38 32.0
*Upsala, ...	+59 51 31.5	— 6 18 42.70	—.2629942	265 19 19.5
*Utrecht, ...	+50 5 10.5	— 5 28 43.67	—.2282832	277 49 5.0
*Vienna, ...	+48 12 35.5	— 6 13 44.09	—.2595381	266 33 58.7
Washington, . . .	+38 53 38.8	0 0 0.00	.0000000	0 0 0.0
*Wilna, ...	+54 50 59.1	— 6 49 23.33	—.2842978	257 39 10.1

The authorities for these positions are given in the volumes for 1871 and 1872.

More recent telegraphic determinations, made by the *United States Coast Survey*, give the longitude of Cambridge, Mass., $-0^h\,23^m\,41^s.11$, that of Greenwich, $-5^h\,8^m\,12^s.12$, and that of Paris, $-5^h\,17^m\,33^s.22$.

The correction therefore to be applied to the longitudes of Ann Arbor, Cambridge, (Mass.), Chicago, and Clinton, in the preceding table, is $+0^s.43 = +0^d.0000050 = +6''.45$; to the longitudes of places marked with an *, $-0^s.20 = -0^d.0000023 = -3''.00$; and to the longitudes of other places not in the United States, $+0^s.27 = +0^d.0000031 = +4''.05$.

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THE NAUTICAL PART.

THIS Part of the AMERICAN EPHEMERIS AND NAUTICAL ALMANAC is designed for the special use of NAVIGATORS and therefore adapted to the Meridian of Greenwich. It contains the Ephemeris of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the Ephemeris of the planets Venus, Mars, Jupiter, and Saturn; and the Mean Places of 198 principal fixed stars for the beginning of the year 1878.

Time.—Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. This point is the vernal equinox, and its hour angle is called the *Sidereal Time.* Astronomical clocks are regulated to sidereal time.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

The vernal equinox is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the sidereal time in common use might therefore be called *Apparent Sidereal Time;* and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^s.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Solar Time.—Solar time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun,* is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motions of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it. The clocks in ordinary use, and chronometers used by Navigators, are regulated to *mean* time.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *apparent* and *mean* time is called the *Equation of Time.* By means of it we change *apparent* to *mean* time, or the reverse. Thus, if the *apparent* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *apparent* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

Day.—The *civil day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each; the first of which is marked A. M., the last is marked P. M.

The *astronomical day* commences at noon of the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical, as well as the civil, time may be either *apparent* or *mean*, according as it is reckoned from *apparent* noon, or from *mean* noon.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day.* Thus, January 9th, 2^h A. M., *civil time*, is January 8th, 14^h, *astronomical time;* and January 9th, 2^h P. M., *civil time*, is also January 9th, 2^h, *astronomical time.* The rule, then, for the transformation of civil time into astronomical time is this: If the civil time is marked A. M., take one from the day, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

If the longitude from Greenwich be expressed in time, and, when *west, added* to the local time, or, when *east, subtracted* from the local time, the result is the corresponding Greenwich time. If the local astronomical time is used, the result is the *Greenwich astronomical time,* which ordinarily is that required for the use of this Part of the Ephemeris.

The Calendar.—The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:

Page I. contains the *Apparent Right Ascension and Declination* of the Sun and the *Equation of Time* for each Greenwich *apparent* noon. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity for a given *Greenwich apparent time.* The hourly differences are given for the instant of apparent noon at Greenwich, and, when great accuracy is required, should be first interpolated for *half* the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0. The longitude from Greenwich expressed in time, if *west,* is at that instant the Greenwich apparent time, or time *after* Greenwich apparent noon; if *east,* it is time *before* Greenwich apparent noon. The longitude is therefore employed in reducing the quantities on this page to apparent noon at any place.

The Right Ascension of the sun thus reduced is the *Sidereal Time of local apparent noon.* The difference between it and the clock time of the meridian passage of the sun is the error of the clock on *sidereal* time.

The Declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of this page, let the sun's declination be required at noon of January 3d, 1878, in longitude 146° 4′ W., or $+ 9^h 44^m 16^s$. We first find

	″	° ′ ″
January 3d, at Greenwich *apparent* noon, ☉'s declination =		22 49 0.4 S.
The diff. for 1 hour, +14″.92, multiplied by 9, is	134.28	
The proportional part for $30^m = \frac{1}{2}^h$,	7.46	
" " " $12^m = \frac{1}{5}^h$,	2.98	
" " " $2^m = \frac{1}{30}^h$,	.50	
" " " $15^s = \frac{1}{8}$ of 2^m,	.06	
The sum to be subtracted,	145.28 or	2 25.3 N.
The sun's declination required,		22 46 35.1 S.

The longitude $9^h 44^m 16^s = 9^h 44^m.27 = 9^h.738$; and 14″.92 × 9.738 = 145″.29 = 2′ 25″.29; which is also the reduction obtained in another way.

If the longitude is 146° 4′ E., the reduction, 2′ 25″.3, should be added, and the resulting declination becomes 22° 51′ 25″.7 S.

If greater precision is required, the hourly difference may be first interpolated for $4^h 52^m$ (or half the longitude) *after* noon for the *west* longitude, or for $4^h 52^m$ *before* noon for the *east* longitude. This will give, in the first case, the hourly difference 15″.15, and the resulting declination 22° 46′ 32″.9 S.; and, in the second case, the hourly difference 14″.69, and the declination 22° 51′ 23″.4 S.

At sea, however, it is ordinarily sufficient to have the declination to the nearest half minute; and the reduction may be found by Table V. of Bowditch's *American Practical Navigator.*

The *Equation of Time*, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent* time, or the time given by an observation of the sun, to obtain the *mean* time. The heading of the column directs the manner in which the equation is to be applied. Where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The equation of time, as given on page I., is the *mean* time of *apparent* noon, or the hour angle of the mean sun at that instant.

On page I. are also given the *Sun's Semidiameter*, which is used in reducing the altitude of a limb of the sun, or the angular distance of the limb from the moon or some other object, to the altitude, or distance, of the centre of the sun; and the *Sidereal Time of the Semidiameter passing the Meridian*, which is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the *first*, or western, limb, to be subtracted from the time of transit of the *second*, or eastern, limb.

Page II. contains for each Greenwich *mean* noon the *Apparent Right Ascension* and *Declination of the Sun*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given for noon, and may be used in reducing them to any given Greenwich *mean* time. The hourly changes may be first interpolated for *half* the Greenwich time, when great precision is required.

The Right Ascension and Declination on pages I. and II. are affected by *Aberration*, and therefore denote the *apparent* position of the *true* sun. Page II. is more conveniently used when the *mean* time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to *mean* time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination, on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the local time from observations of the sun, and the latitude from other than meridian observations. The heading of the column directs the manner in which it is to be applied to *mean* time to obtain the *apparent* time.

As given on page II., the equation is the apparent time of mean noon; and in general it is the hour angle of the *true* sun at the instant of *mean* noon.

The *Sidereal Time of Mean Noon* is also the *Right Ascension of the Mean Sun.* It may be reduced for the longitude, or to any Greenwich *mean* time, by using the hourly difference, $9^s.8565$; or by Table III. in the Appendix of the *American Ephemeris*, for *reducing intervals of mean solar to sidereal time.* Table LI. of Bowditch's *Navigator* may be used for the same purpose when the nearest quarter of a second only is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting solar time to sidereal time. If we add the right ascension of the *true* sun to the *apparent* time, or the right ascension of the *mean* sun to the *mean* time, the result will be the *sidereal* time.

The sidereal time of mean noon reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a *sidereal interval to a mean time interval* in Table II. of the *American Ephemeris*, or Table LII. of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given *sidereal* time.

As examples of the use of page II.:

1. Let the sun's right ascension and the equation of time be required for 1878, Jan. 4, $6^h\ 12^m\ 13^s$ A. M. mean time at a place whose longitude is 118° 14′ E.

	h m s
The local astronomical *mean* time is	Jan. 3, 18 12 13
The longitude in time,	— 7 52 56
The Greenwich *mean* time,	Jan. 3, 10 19 17
	or Jan. 3, 10.3214

	Sun's R. A.		*Equation of time.*
	h m s		m s
Jan. 3, *Noon*,	18 56 42.14	Jan. 3, *Noon*,	4 48.34 *Subtractive.*
H. D. $11^s.011$ × 10.3214	+ 1 53.65	H. D. + $1^s.155$ × 10.3214	+ 11.92
	18 58 35.79		5 0.26

If greater precision is required, the hourly differences interpolated to $5^h.2$, or $11^s.007$ for the right ascension, and $1^s.151$ for the equation of time, should be used.

The equation of time in this example is *subtractive from* mean time. Its reduction could have been found by Table VI. A. of Bowditch's *Navigator* to seconds only.

2. If the sidereal time is required for the same date and time, we have

	h m s
Jan. 3, *Noon*, the R. A. of the mean sun is	18 51 53.80
Add the H. D. $9^s.8565$ × 10.3214, or	+ 1 41.73
Add the local *astronomical* mean time	18 12 13.00
The required sidereal time is, (rejecting 24^h,)	13 5 48.53

The reduction $1^m\ 41^s.73$ could have been found in Table III. corresponding to the Greenwich mean time, $10^h\ 19^m\ 17^s$. By Table LI. of Bowditch's *Navigator*, the reduction is $1^m\ 41^s.7$.

3. 1878, Jan. 4, A. M., at a place whose longitude is 118° 14′ E., suppose the sidereal time to be $13^h\ 5^m\ 48^s.53$, and that the corresponding mean time is required.

The astronomical day is Jan. 3; the longitude in time $-7^h\ 52^m\ 56^s$, or $-7^h.882$.

		h	m	s	
Jan. 3, the sidereal time of Greenwich mean noon is		18	51	53.80	
The H. D. $9^s.8565 \times (-7.882)$, or the red. for $7^h\ 52^m\ 56^s$ in Table III.		—	1	17.69	
The sidereal time of local noon,		18	50	36.11	
The given sidereal time ($+24^h$, if necessary for the following subtraction)		37	5	48.53	
Subtracting the first from the second gives the *sidereal interval* from noon		18	15	12.42	$=18^h.254$
$-9^s.8296 \times 18.254$, or the red. for $18^h\ 15^m\ 12^s$ in Table II.,		—	2	59.42	
The required astronomical mean time,	Jan. 3,	18	12	13.00	

Page III. contains the *Longitude* and *Latitude of the Sun*, and the *Logarithm of its Distance from the Earth*, at Greenwich mean noon of each day. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ' the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The longitudes of the sun are the true longitudes, not affected by aberration. The latitude is referred to the ecliptic of the date.

The last column on page III. contains the *Mean Time of Sidereal* 0^h, or 24^h—the right ascension of the mean sun. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich *sidereal* time by means of the hourly difference, $-9^s.8296$. The reduction, however, can be taken directly from Table II. of the American Ephemeris, for *reducing intervals of sidereal time to mean solar time*, or approximately, from Table LII. of Bowditch's *Navigator*.

This column is used in converting sidereal time to mean time. As an illustration, let us take Example 3, above.

		h	m	s	
Jan. 3, the mean time of Greenwich sidereal 0^h is		5	7	15.73	
The H. D. $-9^s.8296 \times (-7.882)$, or the red. for long., Table II.,		+	1	17.48	
The mean time of local sid. 0^h,		5	8	33.21	
Add the given sidereal time,		13	5	48.53	$=13^h.097$
The sum is		18	14	21.74	
$-9^s.8296 \times 13.097$, or the red. for $13^h\ 5^m\ 49^s$ in Table II.,		—	2	8.74	
The required astronomical mean time,	Jan. 3,	18	12	13.00	

It was readily seen, in advance, that the sum of the mean time of sidereal 0^h and the given sidereal time would be less than 24^h. Were it more than 24^h, the mean time of sidereal 0^h should be taken out for Jan. 2, that is the *preceding* astronomical day.

Page IV. contains the *Moon's Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time in the same way as the sun's declination and the equation of time in the preceding examples. The sign *plus or minus* (+ or —) prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.273. It may also be obtained from Table XI. of Bowditch's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1878, Mar. 20, 9^h P. M. Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of Mar. 20 is $5''.6$; then as $12^h : 9^h = 5''.6 : 4''.2$ which is the correction to be *subtracted from* the semidiameter at noon, because the semidiameter is *decreasing*. The moon's semidiameter then, for Mar. 20, 9^h, is, $16'\ 35''.6 - 4''.2$, or $16'\ 31''.4$.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for *half* the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Meridian Passage* at Greenwich, which is given on page IV. to minutes and tenths of minutes, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. The reduction may be taken from BOWDITCH's Table XXVIII. by simple inspection. The last column of this page contains the *Age* of the Moon, or the time elapsed since the preceding new moon, to tenths of days.

Pages V. to XII., inclusive, contain the *Moon's Right Ascension* and *Declination* for each day and hour of Greenwich *mean* time. They are accompanied with columns of *differences for one minute*, which are also given at each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. The Greenwich mean time, which is required for taking out these quantities, may be taken directly from a well-regulated chronometer, or obtained by applying the longitude, turned into time, to the local mean time of the observer. Each is taken out for the day and hour of the Greenwich *mean* time; the *diff. for* 1^m multiplied by the *minutes* and parts of a minute of the Greenwich time; and the product added to, or subtracted from, the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1878, Jan. 3, $15^h\ 15^m\ 20^s$, astronomical mean time at Greenwich:

	Right Ascension.		*Declination*
	h m s		° ′ ″
Jan. 3, 15^h	19 27 47.37		24 46 30.9 S.
Diff. $2^s.2253 \times 15.333$	= + 34.12	$6''.943 \times 15.333$	= 1 46.5 N.
Jan. 3, $15^h\ 15^m\ 20^s$	19 28 21.49		24 44 44.4 N.

The differences interpolated for $7^m.67 = 0^h.13$ are for the right ascension $2^s.2246$, and for the declination $16''.958$, which may be used for greater precision.

Page XII. contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII. to XVIII., inclusive, contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, the four larger planets, and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore *astronomical*. All the distances that can be observed on the same day are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W., or E., is affixed to the name of the sun, planet, or star, to indicate that it is on the west, or east, side of the moon.

An observer on the earth's surface having measured a *Lunar Distance*, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the *true*, or *geocentric*, distance. With this distance and the distances in the Ephemeris of the same bodies on the same day, the *Greenwich mean time* of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the *logarithm of the seconds of time in which the distance changes* 1″, or, as it is usually called, the *proportional logarithm of the difference*. It is given for the *middle* instant of the two hours between which it is placed.

For computing the *Greenwich time* we have the following rule:

Find in the Almanac the two distances between which the true distance falls; take out the nearest of these, the hours of Greenwich time over it, and the *P. L. of Diff.* between them:

Find the difference between the true distance and the distance taken from the Almanac; and from the *proportional logarithm* of this difference subtract the *P. L. of Diff.* taken from the Almanac:

The result is the *proportional logarithm* of an interval of time to be *added* to the hours of Greenwich time, taken from the Almanac, when the *earlier* Almanac distance is used; *to* be *subtracted* from the hours of Greenwich time, when the *later* Almanac distance is used.

Another method is, to *add* the *common logarithm* of the difference of the true and the Almanac distances to the *P. L. of Diff.* of the Almanac; the sum will be the *common logarithm* of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the *P. L. of Diff.* in the Ephemeris varies, the Greenwich time, found by the methods just described, may not be sufficiently exact. To correct it for such variation, or *2d difference,* take the difference between the *P. L. of Diff.* used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones.) With this difference, and the first correction of the Greenwich time already found, enter Table I. Appendix, and take out the corresponding seconds, which are to be *added* to the approximate Greenwich time if the *Prop. Logs.* in the Ephemeris are *decreasing;* to be *subtracted* if they are *increasing.*

Thus the *Greenwich mean time* of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer time and the Greenwich mean time will be the *error* of the chronometer as found from the Lunar Distance. The agreement or disagreement of this error with that brought up from the error and rate of a previous date, may show whether the chronometer has run well or ill. In this way Lunar Distances can be used as a check upon the chronometer. By a series of carefully observed Lunar Distances on both sides of the moon, the chronometer error can be tolerably well ascertained.

If the observer has found the *local mean time* of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the Lunar Distance will be his longitude.

As an example of finding the Greenwich mean time from a Lunar Distance, suppose that in 1878, Jan. 6, about 2ʰ of Greenwich astronomical time, the corrected distance of the moon's centre from Aldebaran is 108° 17′ 43″:

		° ′ ″		
Corrected distance,		**108 17 43**		
Distance in the Ephemeris, Jan. 6, 3ʰ 0ᵐ 0ˢ,		**107 43 0**	**P. L.**	**.3091**
Difference,		**0 34 43**	**P. L.**	**.7147**
Time from 3ʰ (*before*)	**— 1 10 44**		**P. L.**	**.4056**
Corr. for 2d Diff., Table I,	**— 2**			
Greenwich Mean Time, Jan. 6,	**1 49 14**			

By a Table of common logarithms, or a Table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:

From Ephemeris,		**P. L.**	**0.3091**
Diff. of distances,	**0° 34′ 43″ = 2083″**	**log**	**3.3187**
Red. of Greenwich time,	**— 1ʰ 10ᵐ 44ˢ = 4244ˢ**	**log**	**3.6278**

the result being the same as by the previous method.

Pages 218 to 241, inclusive, contain the ephemerides of the four principal planets, Venus, Mars, Jupiter, and Saturn. The ephemeris of each consists of its *Apparent Right Ascension* and *Declination*, and their *Variations in one hour*, for each Greenwich mean noon; *Mean Time of its Meridian Passage;* and, at the bottom of the page, its *Semidiameter* and *Horizontal Parallax.*

North declinations are marked +, south declinations —. + prefixed to the change of declination of the sun, moon, a planet, or a star, indicates that north declinations are increasing, or south declinations are decreasing; — indicates that north declinations are decreasing, south declinations increasing.

The right ascension and declination of a planet are required in all observations of it for time, latitude, or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples of the sun previously given. The mean time of passage across any meridian can be found by dividing the *daily* difference by 24, and using the *hourly* difference thus obtained, as in the case of the moon; or, the reduction can be found by the proportion: As 24^h (or 360°) is to the longitude, so is the daily difference to the reduction required.

Pages 259 to 262 contain the *Mean Places*, with their *annual variations*, of one hundred and ninety-eight Fixed Stars for the beginning of the year 1878.

The right ascension of a star is also the *sidereal time* of its meridian passage. From this we may roughly find the mean time of meridian passage by adding the *mean time of sidereal* 0^h on page III. of the Calendar, or subtracting the *sidereal time of mean noon* on page II., (disregarding seconds;) but we can find it more exactly by the processes already given for converting sidereal time to mean time.

The right ascension and declination of a star are required when it has been observed for time, latitude, or azimuth. The mean places are sufficiently accurate for most observations at sea; but for more exact observations, the *apparent* places should be used.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington; and Washington time, *astronomical* or *sidereal*, is required in its use. The longitude of Washington from Greenwich is assumed to be $+5^h\ 8^m\ 12^s$.

Obliquity of the Ecliptic, &c., page 248.—This page contains for every ten days of the year the *Apparent Obliquity*, which is required for the transformation of longitudes and latitudes to right ascensions and declinations, or the reverse; the *Equation of Equinoxes* in longitude and right ascension, or the reduction from the *mean* to the *true* equinox of the date; the *Precession of Equinoxes* in longitude, or the reduction of longitudes from the mean equinox of the *beginning* of the year to the mean equinox of the *date;* the *Sun's Aberration*, which is to be applied to the *true* longitude of the sun, as given in the Ephemeris, to obtain its *apparent* longitude; the SUN'S *Horizontal Parallax;* and the *Mean Longitude of the* MOON'S *Ascending Node.*

At the bottom of the page are given the *Mean Obliquity* for the beginning of the year; the *Annual Precession* for the middle of the year, the precession in a sidereal and in a solar day, and the *daily motion* of the moon's node in longitude.

Fixed Stars.—Pages 249–257 contain for each mean midnight the logarithms of A, B, C, D, also f, G, H, i, and logarithms of g, h, and i, (following BESSEL'S notation,) for reducing the *mean* places of the Fixed Stars at the beginning of the year to their *apparent* places on any day.

The formulæ by which they are prepared, and those in which they are used, are given on page 258. The coefficients are those of PETERS and STRUVE. In terms of right ascension they are expressed in time.

The first set of quantities requires for the star the logarithms of a, b, c, d, a', b', c', d', which are to be found in the Star Catalogues. The other set requires no other star constants than the right ascensions and declinations. f, G, and H are given in time, as well as arc, to facilitate their use with tables of sines, &c., which have the argument in time. Such a table is given in the Appendix.

Tables IV., VI. and VII., in the Appendix, facilitate the computation of terms depending on 2 ☾ and ☾ $-\Gamma'$.

For a star near the pole, it is best to compute the reductions with the mean right ascension and declination at the date instead of the beginning of the year, (or the logarithms of $a, b, c,$ &c., reduced to the date), and add such of the following terms as may be of sufficient magnitude:

In *Right Ascension.*

$$
\begin{array}{l}
\left.\begin{array}{l}
+0^s.000003\ \tau^2 \sin\alpha \\
-0^s.000149\ \tau^2 \cos\alpha
\end{array}\right\} \tan\delta \\[6pt]
\left.\begin{array}{l}
-0^s.0000650\ \tau^2 \sin 2\alpha \\
+0^s.0000103 \sin 2\Omega \cos 2\alpha \\
-0^s.0000107 \cos 2\Omega \sin 2\alpha
\end{array}\right\} \tan^2\delta \\[6pt]
\left.\begin{array}{l}
+0^s.0000620 \sin 2\odot \cos 2\alpha \\
-0^s.0000622 \cos 2\odot \sin 2\alpha
\end{array}\right\} \sec^2\delta \\[6pt]
\left.\begin{array}{l}
+0^s.0000513 \sin(\odot+\Omega)\cos 2\alpha \\
-0^s.0000507 \cos(\odot+\Omega)\sin 2\alpha \\
+0^s.0000097 \sin(\odot-\Omega)\cos 2\alpha \\
-0^s.0000053 \cos(\odot-\Omega)\sin 2\alpha
\end{array}\right\} \tan\delta\sec\delta
\end{array}
$$

In *Declination.*

$$
\begin{array}{l}
\left.\begin{array}{l}
+0''.000975\ \tau^2 \sin^2\alpha \\
-0''.000023 \cos 2\Omega \\
-0''.000080 \cos 2\Omega \cos 2\alpha \\
-0''.000077 \sin 2\Omega \sin 2\alpha \\
+0''.000040 \cos 2\odot \\
-0''.000467 \cos 2\odot \cos 2\alpha \\
-0''.000465 \sin 2\odot \sin 2\alpha
\end{array}\right\} \tan\delta \\[6pt]
\left.\begin{array}{l}
-0''.00004 \cos(\odot+\Omega) \\
-0''.00038 \cos(\odot+\Omega)\cos 2\alpha \\
-0''.00038 \sin(\odot+\Omega)\sin 2\alpha \\
-0''.00038 \cos(\odot-\Omega) \\
-0''.00004 \cos(\odot-\Omega)\cos 2\alpha \\
-0''.00007 \sin(\odot-\Omega)\sin 2\alpha
\end{array}\right\} \sin\delta\tan\delta
\end{array}
$$

Pages 259–262 contain the *mean places* and *annual variations* of 198 Fixed Stars for 1878, Jan. 0^d—.226, or the instant when the sun's mean longitude is 280°. τ on the preceding pages is reckoned from the same epoch. Stars within 25° of either pole are designated by a *.

The *apparent* places of α, δ, and λ Ursæ Minoris, and of 51 Cephei, are given on pages 263–274 for every upper transit at Washington. They include the terms depending on 2 ☾ and ☾ $-\Gamma'$, as well as other small terms given above and on page 258, so far as they were of sufficient importance.

The *apparent* places of the remaining 194 stars follow on pages 275–323, in the order of their right ascensions. They are given for every tenth transit, together with their motions in ten days; and include all terms of the preceding formulæ exceeding $0^s.003$ in right ascension, or $0''.03$ in declination, except those which depend on 2 ☾ and ☾ — Γ′. The mean solar time of transit is also given to the nearest tenth of a day.

Solar Ephemeris.—Pages 324–329 contain the *Apparent Right Ascension* and *Declination* of the Sᴜɴ for each mean and apparent noon at Washington; the *Hourly Motion* at mean noon; the *Equation of Time* at apparent noon with the sign of its application to apparent time; the Sᴜɴ's *Semidiameter* and the *Sidereal Time of its passing the Meridian;* and the *Sidereal Time of Mean Noon.* The explanation of these quantities and their use has already been given on pages 480–483.

The Sᴜɴ's *Horizontal Parallax* is given on page 248.

Moon Culminations.—Pages 330–332 contain the mean solar time of the *Upper Transit* of the Mᴏᴏɴ's *centre* at Washington, expressed to hundredths of a minute, the *difference* for *one hour* of longitude, and the *Sidereal Time of Semidiameter passing the Meridian,* both given for the instant of transit at Washington. The numbers in the fifth column indicate the Sᴛᴀʀs in the list of *Moon Culminating Stars,* pages 333–336, within 30^m of the moon in right ascension. Those nearest the moon in declination are proper to be observed with the moon at each transit. The *bright Limb* of the Moon is indicated by the Roman numerals in the last column.

The time of transit at any place, within six hours of Washington in longitude, may be found with sufficient accuracy from the time of the Washington transit by using the hourly difference interpolated for a longitude from Washington equal to *half* that of the given place. With this time reduced to Greenwich time the moon's right ascension can be taken from the Lunar Ephemeris, pages V–XII of each month, as in the example on page 484. If greater precision is required, or the place is more than six hours from Washington, we may, from the right ascension thus obtained, (which is nearly the *local sidereal time,*) find the *local mean time,* as on page 483, more accurately than before, and thence the *Greenwich mean time,* and with this revise the computation.

As an example, suppose the right ascension of the bright limb of the moon to be required at the transit of January 12, 1878, at Berlin, in longitude

$$6^h\ 1^m\ 47^s.50 = 6^h.0299 = 0^d.2512 \text{ East of Washington.}$$
$$0\ \ 53\ \ 35.50 \qquad \text{" Greenwich.}$$

				h m
Transit at Washington, (p. 330)			Jan. 12,	6 39.92
Corr. for longitude		—6.0299×1ᵐ.913	—	11.54
Transit at Berlin,			Jan. 12,	6 28.38
Longitude from Greenwich,			—	0 53.59
Greenwich mean time,			Jan. 12,	5 34.79
	h m			h m s
Moon's R. A., Jan. 12,	5 0			1 55 30.90
Reduction for	+ 34.79	+34.79×1ˢ.9973		+ 1 9.49
Moon's R. A., Jan. 4,	15 54.28			1 56 40.39
Sid. time of semidiameter passing,				— 1 7.01
R. A. of I, or bright limb,				1 55 33.38

The diff. for 1^h of long., $1^m.913$, is found by interpolating *back* $0^d.126$ from that given on page 330; and $1^s.9973$, the change of R. A. in 1^m, by interpolating *forward* 17^m from that given on page 6 for Jan. 12, 5^h. The time of the semidiameter passing the meridian is interpolated *back* $0^d.2512$ from that given on page 330, for Jan. 12, and is subtracted from the right ascension of the centre, as the bright limb is I., or the preceding one.

The Greenwich mean time computed from the right ascension of the centre is $5^h\ 34^m\ 47^s.06$ and the consequent correction of that right ascension, $-0^s.01$.

Moon-Culminating Stars, pages 333–336.—The *mean* places, with their annual variations, of 193 stars near the moon's path are given for the beginning of the fictitious year (1878, Jan. 0^{d}—.226). The names of those whose *apparent* places are given in the Ephemeris of the *Fixed Stars* are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulæ on pages 249–258. To illustrate the use of these, suppose the apparent place of γ Arietis, one of the four stars proper to be observed with the moon on January 12, be required at its transit of that date at Berlin.

The Washington mean time of the transit at Berlin is January 12, $0^{h}\ 27^{m}$, or $0^{d}.48$ before midnight of January 12. The quantities from page 249, or page 252, are to be taken out for this time.

1st ***Method.***

(Star Tables)	$\log a$	0.515	$\log b$	8.304	$\log c$	8.798	$\log d$	8.500
(p. 249)	$\log A$	9.396	$\log B$	0.847*n*	$\log C$	0.855*n*	$\log D$	1.276
(Star Tables)	$\log a'$	1.253	$\log b'$	9.653*n*	$\log c'$	9.426	$\log d'$	9.457
	$\log Aa$	9.911	$\log Bb$	9.151*n*	$\log Cc$	9.653*n*	$\log Dd$	9.776
	$\log Aa'$	0.649	$\log Bb'$	0.500	$\log Cc'$	0.281*n*	$\log Dd'$	0.733

(p. 333)	$\alpha =$	$1^{h}\ 46^{m}\ 50^{s}.21$		$\delta =$	$+18^{\circ}\ 41'\ 41''.9$
	$Aa =$	+ .815		$Aa' =$	+ 4.46
	$Bb =$	− .142		$Bb' =$	+ 3.16
	$Cc =$	− .450		$Cc' =$	− 1.91
	$Dd =$	+ .597		$Dd' =$	+ 5.41
$\mu = +0^{s}.009$	$\tau\mu =$	.000	$\mu' = -0''.09$	$\tau\mu' =$	0.00
Apparent Place,	$\alpha' =$	1 46 51.03		$\delta' =$	+18 41 53.0

2d ***Method.***

$\alpha = 1^{h}\ 46^{m}.8$ $\delta = +18^{\circ}\ 41'.7$

$G = 20\ 21.5$ $G + \alpha = 22^{h}\ 8^{m}.3 = 332^{\circ}\ 4'.5$

$H = 22\ 37.0$ $H + \alpha = 0\ 23.8 = 5\ 57.0$

$\log \frac{1}{15}$	8.824	$\log \frac{1}{15}$	8.824	$\alpha =$	$1^{h}\ 46^{m}\ 50^{s}.21$
$\log g$	0.936	$\log h$	1.305	$f =$	+ .767
l. sin $(G + \alpha)$	9.670*n*	l. sin $(H + \alpha)$	9.016	$(g) =$	− .091
l. tan δ	9.529	l. sec δ	0.024	$(h) =$	+ .148
$\log (g)$	8.959*n*	$\log (h)$	9.169	$\tau\mu =$	.000
Apparent Right Ascension				$\alpha' =$	1 46 51.03
$\log g$	0.936	$\log h$	1.305		
l. cos $(G + \alpha)$	9.946	l. cos $(H + \alpha)$	9.998	$\delta =$	$+18^{\circ}\ 41'\ 41''.9$
$\log (g')$	0.882	l. sin δ	9.506	$(g') =$	+ 7.62
		$\log (h')$	0.809	$(h') =$	+ 6.44
$\log i$	0.492*n*			$(i) =$	− 2.94
l. cos δ	9.976			$\tau\mu' =$	0.00
$\log (i)$	0.468*n*	*Apparent Declination* . . .		$\delta' =$	+18 41 53.0

The MOON'S *Semidiameter* and *Equatorial Horizontal Parallax* for each mean noon and midnight are on pages 337–340.* In the moon's Ephemeris, as in that of the sun, the hourly motions belong to the instants for which they are given. The hourly change of semidiameter is equal to .2723 times that of the horizontal parallax.

***For eclipses and occultations, BURCKHARDT'S value of the semidiameter, which is $2''.5$ less, is preferred.**

The times of the *Moon's Phases*, *Apogee*, *Perigee*, and *greatest Libration*, are given on page 341; the position of the *Moon's Equator* and the *Moon's mean longitude* on page 342; and a Table for computing the *Libration* of the Moon on page 343.

The *Ephemerides of the seven principal Planets* (pages 344–385) are given both for *mean noon* and the time of *transit*. The *hourly differences* are also given for the same instants. Third differences were used in their computation.

The *Horizontal Parallaxes*, *Vertical Semidiameters*, *and Sidereal Times of the Semidiameters passing the Meridian*, are on pages 386 and 387.

The *Sun's Coördinates* (pages 388–399) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year, (Jan. $0^{d}.0$.) In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:). The latitude is referred to the ecliptic of the date. The reduction to the mean ecliptic of Jan. 0, is $+0''.488\ \tau \sin(\odot + 187^\circ)$, in which τ is the time from Jan. 0, in parts of a year.

The *Heliocentric Coördinates* of the Planets (pages 400–406) are referred to the mean equinox and ecliptic of the mean noon of the 2405,000th day of the Julian Period, or 1872, July 25.

The columns $-\frac{k^2}{r^3}x$, &c., contain the quantities $-1600\,m\frac{k^2}{r^3}x, -1600\,m\frac{k^2}{r^3}y, -1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Page 407 contains the *Inclinations and Longitudes of the Ascending Nodes* at the same epoch, and the *Masses* of the several Planets with their logarithms. The changes of the Inclinations and Nodes in 100 days are also given.

The Heliocentric Coördinates and Masses of the Planets are given for the computation of perturbations.

Eclipses.—Pages 408–414 contain the elements necessary for computation and the principal phases of each eclipse of the SUN and MOON. The semidiameters of the moon are $2''.5$, and those of the sun $2''.2$, less than those in the Ephemeris.

The charts of the *Solar Eclipses* show the part of the world in which each is visible. The dotted curves pass through places where the eclipse begins, or ends, at an exact hour of Washington mean time, and aid in finding an approximate time of the beginning, or end, at any place. The limits and central line will give some idea of the magnitude of the eclipse. The longitudes are reckoned west from Washington.

The Tables of *Data of the Solar Eclipses* contain certain quantities* derived from the elements and independent of the place of observation. They are given for successive times at the Washington meridian; and if their values for the *Penumbra* be taken out for a time T_0, assumed near that of the beginning, or end, of the eclipse at any place, the prediction for that place may be computed quite accurately by the following formulæ:

Let $\varphi =$ the latitude of the place, $+$ when north,
$\lambda =$ its longitude from Washington, $+$ when west,

(*Bessel*,) $\log e = 8.912205$, $\quad \log(1-e^2) = 9.9970916$, $\quad \sin\chi = e\sin\varphi$,

$$h = \sec\chi\cos\varphi, \qquad k = (1-e^2)\sec\chi\sin\varphi,$$

$$a = A - h\sin(\mu-\lambda),$$
$$b = B - E\,k + G\,h\cos(\mu-\lambda),$$
$$c = -C + F\,k - H\,h\cos(\mu-\lambda),$$
$$m = \sqrt{b\,c} \qquad \text{(usually with same sign as } a).$$

---

*The formulæ are given in CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I, page 513. The changes of A, B, and C for *one minute*, or *one second*, are expressed in units of the sixth decimal place.

If $m = a$, the time T_0 is correctly chosen. If m differ from a, a correction t of the asuumed time may be obtained in seconds by the formulæ,

$$\log \mu' = 1.86167, \qquad a' = A' - \mu' h \cos (\mu - \lambda_,)$$

$$\tan \tfrac{1}{2} Q = \frac{c}{m} = \frac{m}{b} \qquad b' = B' - \mu' G h \sin (\mu - \lambda_,)$$

$$t = \frac{1000000 (m - a)}{a' + b' \cot Q}$$

and a new approximation to the actual Washington time will be

$$T_0' = T_0 + t,$$

with which the computation may be revised.

Thus successive approximations are made until for the last assumed time T_0, $m = a$ very closely, and t is quite small. The local mean time of the phenomenon will be, using the last values of T_0 and t,

$$T_0 + t - \lambda.$$

Q must be taken of the same sign with a, and is a sufficiently near approximation to the angular distance of the point of contact reckoned from the *north* point of the sun's limb, + towards the *east.*

For a total or annular eclipse, the prediction of the interior contacts may be made in the same way, using the *Data* for the *Shadow;* except that Q will have a sign opposite that of a in a total eclipse.

To find V, the angular distance of the point of contact from the *Vertex* of the sun's limb, + towards the *left*, we have the formulæ

$$p \sin P = \sin \varphi \qquad c \sin C = \cos P \tan (\mu - \lambda)$$

$$p \cos P = \cos \varphi \cos (\mu - \lambda) \qquad c \cos C = \sin (P - \delta')$$

$$V = Q - C,$$

in which δ' is the sun's declination.

If the values of Q at the beginning and at the end of the eclipse be found, and their difference (with regard to signs) be denoted by $2\,\theta$, the number of digits eclipsed is

$$12 (1 + n) \sin^2 \tfrac{1}{2} \theta, \qquad \text{or } 12 (1 + n) \cos^2 \tfrac{1}{2} \theta,$$

according as θ is acute or obtuse; n being the quotient of the semidiameter of the moon divided by that of the sun.

θ may also be found from the formulæ:

$$\tan R = \frac{b'}{a'} \qquad \theta = Q + R$$

(in which R has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \,.\, \frac{m - a}{a'} \,.\, \frac{\sin Q \cos R}{\sin \theta}.$$

The following is an example of the computation of the beginning of the Eclipse of July 29, 1878, for the Observatory at Washington, for which

$\varphi = + 38° 53' 38''.8 \qquad \lambda = 0° 0' 0''.0$

(1) $\log e = 8.912205$

(2) $\text{l.} \sin \varphi = 9.7978788 \qquad (1) + (2) \qquad \text{l.} \sin \chi = 8.710084$

(3) $\log (1 - e^2) = 9.9970916$

(4) $\text{l.} \sec \chi = 0.0005721 \qquad (2) + (3) + (4) \qquad \log k = 9.7955425$

(5) $\text{l.} \cos \varphi = 9.8911513 \qquad (4) + (5) \qquad \log h = 9.8917234$

By the chart, or a preliminary computation, the Washington mean time of the beginning of the eclipse at Washington is $4^h\,36^m.4$, for which we take from the table for *Penumbra,* on page 411, the values of A, B, C, &c.

Computation of t, the correction of T_0.

$\mu = 67^\circ\ 32'\ 53''.5$

$\mu - \lambda = 67^\circ\ 32'\ 53''.5$

(1) $\text{l. sin}\ (\mu - \lambda) = 9.9657664$

(2) $\log h = 9.8917234$

(3) $\text{l. cos}\ (\mu - \lambda) = 9.5819566$

(4) = (1) + (2) $\log h \sin (\mu - \lambda) = 9.8574898$

(5) $\log \mu' = 1.86167$

(6) $\log G = 9.498760$

(7) = (2) + (3) $\log h \cos (\mu - \lambda) = 9.4736800$

(8) $\log H = 9.510631$

(6) + (7) $\log G h \cos (\mu - \lambda) = 8.972440$

(7) + (8) $\log H h \cos (\mu - \lambda) = 8.984301$

(5) + (7) $\log \mu' h \cos (\mu - \lambda) = 1.33535$

(4) + (5) + (6) $\log \mu' G h \sin (\mu - \lambda) = 1.21792$

(20) $\log b = 9.800628$

(21) $\log c = 9.642701$

(22) = $\frac{1}{2}$ [(20) + (21)] $\log m = 9.721665\,n$

(22) — (20) = (21) — (22) $\text{l. tan}\ \frac{1}{2} Q = 9.921037\,n$

Angle from N. point, $Q = 79^\circ\ 38'.4$

(29) $\text{l. cot}\ Q = 9.26201\,n$

(30) $\log b' = 1.84954\,n$

(29) + (30) $\log b' \cot Q = 1.11155$

(31) $\log (m - a) + 6 = 1.7782\,n$

(32) $\log (a' + b' \cot Q) = 2.1434$

(31) — (32) $\log t = 9.6348\,n$

(9) $\log E = 9.977264$

(10) $\log k = 9.795542$

(11) $\log F = 9.975914$

(9) + (10) $\log E k = 9.772806$

(10) + (11) $\log F k = 9.771456$

(12) $A = +0.19350$

(13) $-h \sin (\mu - \lambda) = -0.72026$

(14) $B = +1.13068$

(15) $-E k = -0.59266$

(16) $G h \cos (\mu - \lambda) = +0.09385$

(17) $-C = -0.05513$

(18) $F k = +0.59082$

(19) $-H h \cos (\mu - \lambda) = -0.09645$

(12) + (13) $a = -0.52676$

(14) + (15) + (16) $b = +0.63187$

(17) + (18) + (19) $c = +0.43924$

$m = -0.52682$

$m - a = -0.00006$

(23) $A' = +147.83$

(24) $-\mu' h \cos (\mu - \lambda) = -\ 21.64$

(25) $B' = -\ 54.20$

(26) $-\mu' G h \sin (\mu - \lambda) = -\ 16.52$

(25) + (26) $b' = -\ 70.72$

(27) = (23) + (24) $a' = +126.19$

(28) $b' \cot Q = +\ 12.93$

(27) + (28) $a' + b' \cot Q = +139.12$

		h	m	s
Assumed time, ...	$T_0 =$	4	36	24.0
Correction of the assumed time, ...	$t =$		—	0.4
Washington time of the beginning	July 29,	4	36	23.6

We have also $C = 55^\circ\ 12'$; the angle from the *Vertex*, $V = -134^\circ\ 51'$; $\theta = 108^\circ\ 54'$, and the magnitude of the eclipse 8.2 digits, or 0.69 of the sun's disc, on the north limb.

Occultations.—Pages 415–449 contain *Elements for facilitating the Prediction of Occultations of Planets and Stars by the Moon.* The list includes all stars to the $6\frac{1}{2}$ magnitude in the *Catalogue of the British Association*, and a few others of less magnitude, contained in the *Almanac Catalogue of Zodiacal Stars* and chiefly belonging to clusters, which can be occulted during the year 1878.

Pages 450–451 contain a list of such occultations and near approaches as will be visible at Washington during the year 1878. For the latter, the time of nearest approach, the nearest point of the moon's limb and the distance of the star from the moon's limb are stated.

The elements comprise the *Date, the Name, Magnitude and Declination of the Star*; the *Limiting Latitudes* within which the occultation may be visible; and, at the time of geocentric conjunction of the moon and star in right ascension, the following quantities:

$\mathcal{J}$ = Washington mean time,

H = Hour angle of the star at Washington, + when west;

$$X = \frac{15\ (\alpha - \alpha')}{\pi} \cos \delta = 0, \qquad Y = \frac{\delta - \delta'}{\pi},$$

$$x' = \frac{15\, \Delta \alpha}{\pi} \cos \delta, \quad y' = \frac{\Delta \delta}{\pi},$$ the hourly changes of x and y;

in which α and δ are the true right ascension and declination of the moon,

$\Delta\,\alpha$ and $\Delta\,\delta$, their motions in one hour of mean time,

π, the moon's equatorial horizontal parallax,

α' and δ', the apparent right ascension and declination of the star.

The reductions of the mean place of the star at the beginning of the year to its apparent place at the date, are also given to facilitate the reduction of observed occultations.

For any other Washington mean time $T = \mathcal{T} + t$, we have (μ being the sidereal equivalent of t, and t as a coefficient being expressed in hours)

$$h = H + \mu, \text{ the star's hour angle at Washington,}$$

$$x = t\,x', \qquad y = Y + t\,y'.$$

As the moon's motion is here regarded as uniform, the expressions for x and y are more nearly correct the smaller the interval t. The exact values, to be employed in the reduction of an observed occultation, are

$$x = \frac{\sin(\alpha - \alpha')\cos\delta}{\sin\pi}$$

$$y = \frac{\sin(\delta - \delta')\cos^2\tfrac{1}{2}(\alpha - \alpha') + \sin(\delta + \delta')\sin^2\tfrac{1}{2}(\alpha - \alpha')}{\sin\pi}$$

in which α, δ and π are to be taken from the Ephemeris for the time T. But for predicting the times of *immersion* and *emersion*, and the points on the moon's limb where these appearances take place, the preceding expressions suffice to enable the observer to determine when and where to watch for these phenomena.

For the place of observation, let

φ = its latitude, + when north;

λ = its longitude from Washington, + when west;

(*Bessel.*) $\log e = 8.9122\ 05$, $\qquad \log(1 - e^2) = 9.9970\ 916$,

$\sin\chi = e\sin\varphi$, $\qquad E = (1 - e^2)\sec\chi$, $\qquad F = \sec\chi$.

$\mu' = 54147.8\sin 1''$, $\qquad \log\mu' = 9.41916$.

The constants for the place, required both in the prediction of occultations and the reduction of those observed, are φ, λ, and $E\sin\varphi$, $F\cos\varphi$, $\mu'\,F\cos\varphi$, or their logarithms.

The values of E and F and their logarithms are given for different latitudes in the following table:

φ	*E.*	*F.*	Log *E.*	Log *F.*
0°	1—.0067	1.0000	9.9971	0.0000
±10	1—.0066	1.0000	9.9971	0.0000
20	1—.0063	1.0004	9.9973	0.0002
30	1—.0059	1.0008	9.9975	0.0004
40	1—.0053	1.0014	9.9977	0.0006
50	1—.0047	1.0020	9.9979	0.0009
60	1—.0042	1.0025	9.9982	0.0011
70	1—.0037	1.0030	9.9984	0.0013
80	1—.0034	1.0033	9.9985	0.0014
90	1—.0033	1.0034	9.9985	0.0014

An occultation will not be visible unless,

1. The latitude of the place is included within the limiting parallels;

2. At the time of occultation, or the local mean time ($T - \lambda$), the sun is sufficiently below the horizon;

3. At that time the star is above the horizon, or its local hour angle $(h-\lambda)$ is numerically less than τ found by the formula

$$\cos\tau = -\tan\varphi\tan\delta',$$

A table of τ, or the hour angle of a body in the horizon, computed for the latitude of the place and different declinations, will be useful for such comparisons.

These conditions can generally be determined in advance, as in latitudes less than 60° $(ϭ-\lambda)$ may be used instead of $(T-\lambda)$ except within two hours of sunrise or sunset; and $(H-\lambda)$ instead of $(h-\lambda)$ except within half an hour of the star's rising or setting. For these exceptional cases, which, however, are not favorable for observation, the time of *apparent* conjunction in right ascension, or some nearer approximation to the time of occultation, can be subsequently employed.

Having ascertained that an occultation will be visible, we may proceed to compute the times of immersion and emersion by the following formulæ:

1. To find approximately the time* of *apparent* conjunction in right ascension, as affected by parallax;

$$u = F\cos\varphi\sin(H-\lambda)$$
$$u' = \mu' F\cos\varphi\cos(H-\lambda)$$

In *hours*, $\quad (t) = \dfrac{u}{x'-u'}$

Washington time of *apparent* conjunction, $(T) = ϭ + (t)$

Local " " " $(T)-\lambda$

The value of (T) to the nearest tenth of an hour is sufficiently accurate. If a closer approximation is desired, the computation may be repeated, using $h = H + (\mu)$ instead of H, (μ) being the sidereal equivalent of (t),

$$x = (t)\,x' \qquad (t') = -\frac{x-u}{x'-u'} \qquad (T') = (T) + (t').$$

2. To find a nearer approach to the time of either phase, let us assume the Washington mean time T, which for the first computation may be the computed time of *apparent* conjunction, or some conjectural time near it. For this time find

$$t = T - ϭ \qquad h = H + \mu, \text{ or } h-\lambda = H-\lambda+\mu$$
$$x = t\,x' \qquad y = Y + t\,y',$$

and then T_1 and T_2, the approximate Washington mean times of immersion and emersion, by the following formulæ. The local mean times will be found by subtracting from T_1 and T_2 the longitude of the place.

$$A\sin B = E\sin\varphi \qquad u = F\cos\varphi\sin(h-\lambda) \qquad u' = \mu' A\cos B$$
$$A\cos B = F\cos\varphi\cos(h-\lambda)\dagger \qquad v = A\sin(B-\delta') \qquad v' = \mu' u\sin\delta'$$

[or, with other auxiliaries than A and B,

$$b = F\cos\varphi\cos(h-\lambda) \qquad u' = b\,\mu' \qquad v' = E\sin\varphi\cos\delta' - b\sin\delta']$$

$$m\sin M = x-u \qquad n\sin N = x'-u'$$
$$m\cos M = y-v \qquad n\cos N = y'-v'$$

Burckhardt. $\quad k = .27227 \qquad \log k = 9.43500$

$$\cos\psi = \frac{m\sin(M-N)}{k} \qquad \psi < 180$$

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[*] It is convenient, but not necessary, to have this time.

[†] If $(h-\lambda)$ be restricted to values numerically less than 12^h, or 180°, B may be taken in the same quadrant with $(h-\lambda)$, and have the same sign as the latitude. For a place where many occultations are observed, tables of A, B, u and u' for different values of $(h-\lambda)$, or of $E\sin\varphi\cos\delta'$ for different declinations, would be convenient.

	For *Immersion.*	For *Emersion.*
In hours,	$t_1 = -\frac{m\cos(M-N)}{n} - \frac{k\sin\psi}{n}$	$t_2 = -\frac{m\cos(M-N)}{n} + \frac{k\sin\psi}{n}$
Washington mean time,	$T_1 = T + t_1$	$T_2 = T + t_2$
Local " "	$T_1 - \lambda$	$T_2 - \lambda$

3. Assuming now $T_1 = \delta + t + t_1$ for the immersion, or $T_2 = \delta + t + t_2$ for the emersion, as the Washington time instead of T, and recomputing, we can obtain nearer approximation to the times of these phenomena. But the first operation will give the times usually within one or two minutes, which is sufficiently accurate for watching for an immersion. For an emersion a more accurate knowledge is desirable. But for this purpose it will often be sufficient to substitute $(h_2-\lambda)=(h-\lambda+\frac{1}{2}\mu_2)$ for $(h-\lambda)$ in the computation of u' and v', and, using the same m and M as before, recompute n, N, ψ and t_2, a new correction to be added to T.

If log. $m\sin(M-N)=9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\cos\psi < 1$, or $\cos\psi > 1$. In the latter case the impossible value of $\cos\psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemeris of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi=0°$, or $180°$, according as $m\sin(M-N)$ is $+$ or $-$; and for finding the time of nearest approach,

$$t = -\frac{m\cos(M-N)}{n}$$

The distance from the moon's limb is then

$$\pi\,[m\sin(M-N)-k],$$

disregarding the sign of $m\sin(M-N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\,[m\sin(M-N)-k]\,[1+z\sin\pi],$$

where

$$z = A\cos(B-\delta').$$

4. Having found satisfactorily the times of immersion and emersion, and therefore N and ψ in each case, we have as the angle from the *North point* of the moon's limb, positive towards the *West*,

$$Q = 90° - N - \psi \qquad \text{for an } \textit{Immersion},$$
$$Q = 90° - N + \psi \qquad \text{for an } \textit{Emersion};$$

and, taking

$$c\sin C = u + t\,u'$$
$$c\cos C = v + t\,v',$$

in which the last value of t for the particular phase is properly used, we have as the angle from the *Vertex* of the moon's limb, or that point which is nearest the zenith,

$$V = Q + C$$

also reckoned positive in the same direction as Q, i. e., towards the left.

For the image as seen through an inverting telescope, these angles should be increased by 180°.

5. As a check on the accuracy of the work, we have, using the last computed values of the several quantities,

$$[(x-u)+t(x'-u')]^2+[(y-v)+t(y'-v')]^2 = k^2 = 0.07413;$$

Or, we may compute u, v, x, and y, with the last determined time of immersion, or of emersion, and we should have for either, as the condition of the phenomenon,

$$(x-u)^2+(y-v)^2=k^2=0.07413$$

or, $$\log m = \log k = 9.4350$$

Greater values than these indicate that the computed time of an immersion is too early, of an emersion too late, by a quantity nearly proportional to the difference.

Example.—It is required to find the times of immersion and emersion of η Piscium, January 11, 1878, at Point Ballena, on the coast of Chile, for which

$$\varphi = -25^\circ\ 49'.0 \qquad \lambda = -0^{\mathrm{h}}\ 24^{\mathrm{m}}.1$$

The data for the computation are given on page 415. We see in advance that ϕ is between the limiting latitudes; that ☌ $-\lambda$, the local time of *geocentric* conjunction, is about two hours past sunset; and that $H-\lambda$ is only two hours and a half from the meridian.

The constants of the place are :

$\mathrm{l.}\sin\phi = 9.6390n$ $\qquad \mathrm{l.}\cos\phi = 9.9543$ $\qquad \log F\cos\phi = 9.9546$

$\log E = 9.9974$ $\qquad \log F = 0.0003$ $\qquad \log\mu' = 9.4192$

(1) $\log E\sin\phi = 9.6364n$ $\qquad$ (2) $\log F\cos\phi = 9.9546$ $\qquad$ (3) $\log\mu\ F\cos\phi = 9.3738$

From page 416 we have for the time of *geocentric* conjunction,

Washington time, ☌ $= \text{Jan. } 11,\ 8^{\mathrm{h}}\ 11^{\mathrm{m}}.7$ $\qquad Y = -.8798$ $\qquad \delta' = +14^\circ\ 43'.1$

Local time, ☌ $-\lambda =$ " $11,\ 8\ 35.8$ $\qquad x' = .5043$ $\qquad \mathrm{l.}\sin\delta' = 9.4049$

$H = +2\ 12.3$ $\qquad y' = +.2278$

$H-\lambda = +2\ 36.4 = +39^\circ\ 6'$

1. For an approximation to the time of *apparent* conjunction, we have

(2) $\log F\cos\phi = 9.955$ $\qquad$ (3) $\log\mu' F\cos\phi = 9.374$ $\qquad x' = +.504$

(4) $\mathrm{l.}\sin(H-\lambda) = 9.800$ $\qquad$ (5) $\mathrm{l.}\cos(H-\lambda) = 9.890$ $\qquad u' = +.184$

(6)=(2)+(4) $\log u = 9.755$ $\qquad$ (7)=(3)+(5) $\log u' = 9.264$ $\qquad x'-u' = +.320$

(8) $\log(x'-u') = 9.505$

(6)−(8) $\log(t) = 0.250$ $\qquad (t) = +1^{\mathrm{h}}.78 = +1^{\mathrm{h}}\ 46^{\mathrm{m}}.8$

☌ $= 8\ 11.7$

Washington mean time, ... $(T) =$ ☌ $+ (t) = \text{Jan. } 11,\ 9\ 58.5$

2. Assuming this time, for which $t = (t) = +1^{\mathrm{h}}\ 46^{\mathrm{m}}.8$, we proceed as follows to find the times of immersion and emersion and the angles of position of the points of contact.

(9) $t = 1^{\mathrm{h}}\ 46^{\mathrm{m}}.8,\quad \mu = +1^{\mathrm{h}}\ 47^{\mathrm{m}}.1$

(10) $H-\lambda = +2\ 36.4$

(9)+(10) $h-\lambda = +4\ 23.5 = +65^\circ\ 52'.5$

(11) $\mathrm{l.}\sin(h-\lambda) = 9.9603$

(12)=(2) $\log F\cos\phi = 9.9546$

(13) $\mathrm{l.}\cos(h-\lambda) = 9.6114$

(14) $\mathrm{l.}\sin\delta' = 9.4049$

(11)+(12) $\log u = 9.9149$ $\qquad \mathrm{l.}v' = 8.7390$

(15) $\log\mu' = 9.4192$ $\qquad \mathrm{l.}u' = 8.9852$

(16)=(12)+(13) $\log A\cos B = 9.5660$

(17)=(1) $\log A\sin B = 9.6364n$ $\qquad B = -49^\circ\ 38'$

(17)−(16) $\mathrm{l.}\tan B = 0.0704n$ $\qquad \delta' = +14\ 43$

(18) $\mathrm{l.}\sin B = 9.8819n$ $\qquad B-\delta' = -64\ 21$

(19)=(17)−(18) $\log A = 9.7545$

(20) $\mathrm{l.}\sin(B-\delta') = 9.9549n$

(19)+(20) $\log v = 9.7094n$

(21) $tx' = +1.78 \times .5043 = x = +.8977$

(22) $u = +.8220$

(23) $Y = -.8798$

(24) $ty' = +1.78 \times .2278 = +.4055$

(25) $y = -.4743$

(26) $v = -.5121$

(21)−(22) $x-u = m\sin M = +.0757$

(25)−(26) $y-v = m\cos M = +.0378$

(27) $x' = +.5043$

(28) $u' = +.0967$

(29) $y' = +.2278$

(30) $v' = +.0548$

(27)−(28) $x'-u' = n\sin N = +.4076$

(29)−(30) $y'-v' = n\cos N = +.1730$

(31) $\log m\sin M = 8.8791$

(32) $\log m\cos M = 8.5775$

(33) $\mathrm{l.}\tan M = 0.3016$ $\qquad M = 63^\circ\ 28'$

(34) $\mathrm{l.}\sin M = 9.9517$

(35) $\log n\sin N = 9.6102$

(36) $\log n\cos N = 9.2380$

(37) $\mathrm{l.}\tan N = 0.3722$ $\qquad N = 67\ \ 0$

(38) $\mathrm{l.}\sin N = 9.9640$ $\qquad M-N = -\ 3\ 32$

(39)=(31)−(34) $\log m = 8.9274$

(40) *Constant,* $\log\frac{1}{k} = 0.5650$

(41) $\mathrm{l.}\sin(M-N) = 8.7898n$

(39)+(40)+(41) $\mathrm{l.}\cos\psi = 8.2822n$

(45) $\psi = 91^\circ\ 6'$

(46) $90^\circ - N = 23\ 0$

(46)−(45) at Im. $Q_1 = -\ 68\ 6$

(46)+(45) at Em. $Q_2 = +114\ 6$

(39) $\log m = 8.9274$

(42)=(38)−(35) $\log\frac{1}{n} = 0.3538$

(43) $\mathrm{l}\cos(M-N) = 9.9992$

(44) $\log\frac{m}{n}\cos(M-N) = 9.2864$

(47) $\mathrm{l.}\sin\psi = 9.9999$

(42)−(40) $\log\frac{k}{n} = 9.7888$

(48) $\log\frac{k}{n}\sin\psi = 9.7887$

(49) $-\frac{m}{n}\cos(M-N) = -0^{\mathrm{h}}.191$

(50) $\frac{k}{n}\sin\psi = +0.615$

For *Immersion.*

(49)−(50) $t_1 = -0^{h}.806$

$-0.806 \times \cdot 097 \quad = \quad t_1 u' = -\ .078$

$u = +\ .822$

$u + t_1 u' \quad = \quad c_1 \sin C_1 = +\ .744$

$-0.806 \times \cdot 055 \quad t_1 v^1 = -\ .044$

$v = -\ .512$

$v + t_1 v' \quad = \quad c_1 \cos C_1 = -\ .556$

$\log c_1 \sin C_1 = 9.872$

$\log c_1 \cos C_1 = 9.745n$

$\text{l.} \tan C_1 = 0.127n$

$t_1 = -0^{h}.806 = -0^{h}\ 48^{m}.4$

T = Jan. 11, 9 58.5

Washington mean time, $T_1 = T + t_1$ = " 11, 9 10.1

λ = − 0 24.1

Local mean time, $T_1 - \lambda$ = " 11, 9 34.2

$C_1 = -\ 53^{\circ}.3$

Angle from North Point, $Q_1 = -\ 68.1$

Angle from Vertex $= Q_1 + C_1 = v_1 = -\ 121.4$

For *Emersion.*

(49)+(50) $t_2 = +0^{h}.424$

$0.424 \times \cdot 097 = \quad t_2 u' = +\ .041$

$u = +\ .822$

$u + t_2 u' \quad = c_2 \sin C_2 = +\ .863$

$0.426 \times \cdot 065 = \quad t_2 v' = +\ .023$

$v = -\ .512$

$v + t_2 v' \quad c_2 \cos C_2 = -\ .489$

$\log c_2 \sin C_2 = 9.936$

$\log c_2 \cos C_2 = 9.689n$

$\text{l.} \tan C_2 = 0.247n$

$t_2 = +0^{h}.424 = +\ 0^{h}\ 25^{m}.4$

T = Jan. 11, 9 58.5

$T_2 = T + t_2$ = " 11, 10 23.9

λ = − 0 24.1

$T_2 - \lambda$ = " 11, 10 48.0

$C_2 = -\ 60^{\circ}.5$

$Q_2 = +\ 114.1$

$Q_2 + C_2 = V_2 = +\ 53.6$

We have also

$$[(x-u)+t\,(x'-u')]^2+[(y-v)+t\,(y'-v')]^2 = .07423 \qquad .07408$$

which indicate that the computed times are too early.

Using the angle M, $\log m$, t_2, and the angle C_2, from the above computation, we obtain a nearer approximation to the time and the angles of position for the emersion, as follows:

(9) $\frac{1}{2} t_2 = +12^{m}.7 \quad \frac{1}{2} \mu = +0^{h}\ 12^{m}.7$

(10) $h - \lambda = +4\ 23.5$

(9)+(10) $h_2 - \lambda = +4\ 36.2 = +69^{\circ}\ 3'.0$

(11) $\text{l.} \sin (h_2 - \lambda) = 9.9703$

(12)=(2) $\log F \cos \phi = 9.9546$

(13) $\text{l.} \cos (h_2 - \lambda) = 9.5533$

(14) $\text{l.} \sin \delta' = 9.4049$

(11)+(12) $\log u = 9.9249 \quad \text{l.}\, v'\ 8.7490$

(15) $\log \mu' = 9.4192$

(16)=(12)+(13) $\log A \cos B = 9.5079 \quad \text{l.}\, u'\ 8.9271$

(27) $x' = +.5043$

(28) $u' = +.0845$

(29) $y' = +.2278$

(30) $v' = +.0561$

(27)−(28) $x' - u' = \quad n \sin N = +.4198$

(29)−(30) $y' - v' = \quad n \cos N = +.1717$

(35) $\log n \sin N = 9.6230$

(36) $\log n \cos N = 9.2348 \qquad M = 63^{\circ}\ 28'$

(37) $\text{l.} \tan N = 0.3882 \qquad N = 67\ 45$

(38) $\text{l.} \sin N = 9.9664 \quad M - N = -\ 4\ 17$

(39) $\log m = 8.9274$

(40) *Constant,* $\log \frac{1}{k} = 0.5650$

(41) $\text{l.} \sin (M\text{-}N) = 8.8733n$

(39)+(40)+(41) $\text{l.} \cos \psi = 8.3657n$

(45) $\psi = 91^{\circ}\ 20'$

(46) $90^{\circ} - N = 22\ 15$

Angle from North Point,

(46)+(45) $= \quad Q_2 = +\ 113.6$

$C_2 = -\ 60.5$

Angle from Vertex,

$Q_2 + C_2 \quad = \quad V_2 = +\ 53.1$

(39) $\log m = 8.9274$

(42)=(38)−(35) $\log \frac{1}{n} = 0.3434$

(43) $\text{l.} \cos (M\text{-}N) = 9.9988$

(44) $\log \frac{m}{n} \cos (M\text{-}N) = 9.2696$

(47) $\text{l.} \sin \psi = 9.9999$

(42)−(40) $\log \frac{k}{n} = 9.7784$

(48) $\log \frac{k}{n} \sin \psi = 9.7783$

(49) $-\frac{m}{n} \cos (M\text{-}N) = -.1860$

(50) $\frac{k}{n} \sin \psi = +.6002$

(53)=(49)+(50) $t_2 = +.4142$

(54) $t_2 n \sin N = +.1738$

(27) $m \sin M = +.0757$

(27)+(54) $= \quad (55) = \quad .2495$

(56)=(53)+(34) $t_2 n \cos N = \quad .0711$

(28) $m \cos M = \quad .0378$

(28)+(56) $= \quad (57) = \quad .1089$

$[55]^2 = \quad .0621$

$[57]^2 = \quad .0119$

$[55]^2 + [57]^2 = k^2 = .0741$ Check .0740

$t_2 = +0^{h}.4142 = +\ 0^{h}\ 24^{m}.8$

$T = \quad 9\ 58.5$

Washington mean time, ... $T_2 = \quad 10\ 23.3$

$\lambda = \quad -\ 0\ 24.1$

Local mean time, ... $T_2 - \lambda = \quad 10\ 47.4$

Jupiter's Satellites, pages 452–473. These pages contain for the several Satellites—

1. The Washington mean times of the occultations, eclipses, transits and transits of shadows, arranged in the order of time. Those visible at Washington, or which occur when the sun is more than 8° below and Jupiter more than 8° above the horizon of that place, are indicated by a *.

2. A diagram for each month, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipse for an inverting telescope. The stars indicate the points of disappearance and reappearance, distinguished by *d* and *r*. The space between them shows the position of the shadow of the planet.

3. Washington mean times of geocentric superior conjunctions, arranged for each satellite separately.

4. The rectangular coördinates x' and y', for successive times reckoned from the next preceding superior conjunction, computed for a constant major axis and maximum minor axis of the apparent ellipse described by the satellite as seen from the sun at its mean distance from the planet.

5. The *factors* by which x' and y' are to be multiplied to obtain the actual coördinates x and y for the apparent ellipse, as seen from the earth at any date; the inclination p of the minor axis to the circle of declination, reckoned from the *north*, positive towards the *east;* and the actual coördinates x and y at the times of eclipse of each satellite.

The coördinates are referred to the centre of the primary and to the major and minor axes of the ellipse described by the satellite, and are expressed in seconds of arc. x is positive when on the *east* side of the planet; y is positive when *north*. By means of them the configurations of the satellite can be found at any time.

The *Elements of Saturn's Ring*, page 474, give the *apparent* magnitude and position of its several components for each 20 days. The *apparent Discs of* Venus and Mars are given on the same page for each 30 days.

The *Phenomena*, pages 475 and 476, include the times of conjunction, opposition and quadrature, perihelion and aphelion, stationary points and conjunction, with the moon in right ascension of the principal planets.

The *Positions of the Principal Observatories* are given on pages 477 and 478. The authorities for these positions, and the longitudes with reference to the meridians upon which they actually depend, will be found in the American Ephemeris for 1870, 1871 and 1872.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1878.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 248) are taken from STRUVE and PETERS. They are:

Precession* $=50''.2411+0''.0002268\,t$,
Obliquity† $=23^\circ\ 27'\ 54''.22-0''.4645\,t-0''.0000014\,t^2$,
Aberration ‡ $=20''.4451\pm0''.0111$,

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulæ given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, Moon, and Planets, the Obliquity of the Ecliptic and the Nutation of HANSEN and OLUFSEN's *Tables du Soleil* have been used; but the same Constant of Aberration as for the fixed stars. The Mean Obliquity exceeds that of PETERS by 0''.33.

The General Constants for Star Reduction are adapted to the formulæ given on page 258. They are computed from the *Tables to facilitate the Reduction of Places of the Fixed Stars, prepared for the use of the American Ephemeris and Nautical Almanac*, Washington, 1869, which have been used in the preparation of previous volumes of this work subsequent to that of 1861.

The Mean Places of the 198 Standard Stars have also been taken from the same tables. Dr. GOULD's *Standard Places of Fundamental Stars*, *U. S. Coast Survey*, Washington, 1866, is the authority given for 48 Northern Circumpolar Stars and 128 Time Stars; the *British Nautical Almanac* for 1848 for 13 Stars south of —40° declination; and WOLFER's *Tabulæ Reductionum Observationum Astronomicarum*, Berlin, 1858, for Sirius, Castor, (the mean of the components,) Procyon, γ Draconis, and α Cephei. The magnitudes, except of the 13 Southern Stars, are ARGELANDER's.

The reductions from the mean to the apparent places of the Stars contained in WOLFER's *Tabulæ Reductionum*, except α and δ Ursæ Minoris, have been derived from that work; the reductions of the rest from the *Tables of the American Ephemeris*. These reductions include the terms of the formulæ on pages 258 and 487, so far as sensible, except those depending on the moon's longitude. These terms, however, have been applied to the four stars whose places are given for every day. Their values for other stars may readily be found by Tables VI. and VII. of this Appendix.

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* PETERS' *Numerus Constans Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE's *Constant de l'Aberration*, p. 47.

APPENDIX.

To the position of Sirius, as derived from WOLFERS, (the correction of the "*Tabula Subsidiaria*" being omitted), have been applied the terms given by AUWERS,*

$$q=+0^{s}.0647-0^{s}.000718\ (t-1860)+0^{s}.1510\cos\ (u+\ 1^{\circ}\ 6')$$
$$r=-0''.630\ -0''.00044\ \ (t-1860)+1''.445\ \ \sin\ (u+23^{\circ}\ 30')$$

in which u, the eccentric anomaly from the inferior apsis, is found by the formula

$$u-e\sin u=n\ (t-T),$$

from the elements

$T=1793.830$, passage through the inferior apsis,
$e=\ \ 0.6010$, the eccentricity,
$n=\ \ 7^{\circ}.28475$, mean annual motion in orbit,
$49^{y}.418$, period of revolution.

The Mean Places of such of the Moon-culminating Stars as are not found in the list of standard stars, have been taken in order of preference from a revised Catalogue in course of preparation, the *Almanac Catalogue of Zodiacal Stars printed for the use of the American Ephemeris and Nautical Almanac, Washington*, 1864; *the Greenwich Twelve-Year Catalogue;* and the *Catalogue of the British Association.*

The Ephemeris of the Sun† is constructed from HANSEN and OLUFSEN's *Tables du Soleil*, Copenhagen, 1853, except that Struve's Aberration has been used. This is equivalent to adding 0″.19 to the longitudes, but does not affect the right ascensions and declinations. The Sun's rectangular equatorial coördinates have been computed from the longitudes and latitudes by the following formulæ:

$$\begin{aligned}
X &= R\cos\lambda\\
Y &= R\sin\lambda\cos\omega-19.3\ R\ \beta\\
Z &= R\sin\lambda\sin\omega+44.5\ R\ \beta\\
X' &= X+Y\sec\omega\ \Delta\lambda\\
Y' &= Y-X\cos\omega\ \Delta\lambda+Z\ \Delta\omega-\ 9.4\ \tau\ R\sin(\odot+187^{\circ})\\
Z' &= Z-X\sin\ \omega\ \Delta\lambda-Y\Delta\omega+21.7\ \tau\ R\sin(\odot+187^{\circ})
\end{aligned}$$

in which λ, β and ω are referred to the equinox and ecliptic of the date; $\Delta\lambda$ is the reduction of longitude for precession and nutation from Jan. 0; $\Delta\omega$ the reduction of the mean to the apparent obliquity; τ the part of the year since Jan. 0; and the numerical coefficients are in units of the 7th place of decimals.

The mean equatorial Horizontal Parallax of the Sun, adopted from Prof. NEWCOMB's *Investigation of the Distance of the Sun and the Elements which depend on it*,‡ is 8″.848. The adopted Semidiameter of the Sun at the Earth's mean distance is 16′ 2″.

The Ephemeris of the Moon is constructed from PEIRCE's *Tables of the Moon*, *2d edition*, Washington, 1865. They include the *Tables of the Moon's Parallax* constructed from WALKER's and ADAMS's formulæ.

The Semidiameter of the Moon is computed from the Moon's Horizontal Parallax by the formula,

$$S=.272274\ \pi+2''.5.$$

A semidiameter 2″.5 less is found to be better adapted for the computation of eclipses and occultations.

The Ephemeris of Mercury is derived from Prof. WINLOCK's *Tables of Mercury*, Washington, 1864. They are based on the theory of LE VERRIER, published in the Additions to the *Connaissance des Temps* for 1848.

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† From CARLINI's Tables before 1858.

‡ *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Venus is derived from Mr. G. W. Hill's *Tables of Venus*, Washington, 1872.

The Ephemeris of Mars is derived from manuscript Tables constructed from Lindenau's Tables. Mr. Hugh Breen's results, contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0:

$$
\begin{array}{lllll}
L & = 320^{\circ} & 13' & 33''.87 & + 689101''.1527\,t. \\
\pi & = 333 & 23 & 17.84 & + 65''.9990\,t. \\
\Omega & = 48 & 25 & 55.29 & + 27''.6997\,t. \\
i & = 1 & 51 & 2.20 & - 0''.02141\,t. \\
e & = 19238''.75 & & & + 0''.18549\,t. \\
n & = 689050''.8927 & & & \\
a & = 1.5236915 & & &
\end{array}
$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The Ephemeris of Saturn is derived from Bouvard's Tables. The perturbations produced by Jupiter, and the change of the Great Inequality since 1840, have been increased by $\frac{1}{50}$ of their value. Adams's Table in the *British Nautical Almanac* for 1851 has been substituted for Bouvard's Table XLII. The following corrections of the elements for 1855.0 have also been introduced:

corr. mean long. $= + 4''.9$
corr. long. of node $= - 143''.0$
corr. inclination $= - 5''.7 + 0''.0149\,t.$

The Ephemeris of Uranus is derived from Prof. Newcomb's *Tables of Uranus*, Washington, 1873.

The Ephemeris of Neptune is derived from Prof. Newcomb's *Tables of Neptune*, Washington, 1866.

The eclipses and elongations of Jupiter's Satellites are computed from Damoiseau's Tables.

The semidiameters of the Planets are computed from the following values:

	Semidiameter.	Log Dist.	Authority.
Mercury	3''.34	0.00	Le Verrier, *Theory of Mercury*.
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Jupiter (equat.)	20.00	0.70	
Saturn (equat.)	9.38	0.95	

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The Tables for the eclipses of the sun are adapted to the modification of Bessel's formulæ, suggested by T. Henry Safford, jr. The formulæ are given in Peirce's *Spherical Astronomy* and Chauvenet's *Spherical and Practical Astronomy*, Vol. I.

APPENDIX.

The elements for occultations of stars by the moon are adapted to **Bessel**'s method in the *Astronomische Nachrichten*, Vol. VII., and the *Berliner Astronomisches Jahrbuch* for 1831. The formulæ are also to be found in CHAUVENET's *Astronomy*.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner:

The Sun has been computed by Mr. EASTWOOD; the Moon's longitude, latitude, semidiameter and horizontal parallax by Prof. KEITH, right ascension and declination by Prof. VAN VLECK, and culminations by Prof. RUNKLE; the lunar distances by Mr. W. B. OLIVER; Mercury and Venus by Mr. AUSTIN; Mars and Uranus by Mr. FERREL; Jupiter and Jupiter's Satellites by Prof. KENDALL; Saturn by Mr. G. W. HILL; and Neptune by Mr. WIESSNER. The fixed stars have been prepared by Mr. WIESSNER, Mr. LOOMIS, and Mr. FERREL; the general constants for their reduction by Mr. FERREL; and the occultations by Mr. DOWNES assisted by Mr. WIESSNER. The eclipses have been computed and the charts projected by Mr. HILL. The positions of observatories was compiled by Dr. B. A. GOULD, and revised by him for the volume for 1870.

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval.		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL

Sidereal.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807		
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	.025
10	0 1.638	0 11.468	0 21.207	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.760	1 1.599	1 11.428	16	.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	.060
23	0 3.768	0 13.598	0 23 427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55 046	1 4.875	1 14.705	36	.098
37	0 6.062	0 15 891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	8h.		9h.		10h.		11h.		12h.		13h.		14h.		15h.		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	1	18.636	1	28.466	1	38.296	1	48.125	1	57.955	2	7.784	2	17.614	2	27.443		
1	1	18.800	1	28.630	1	38.459	1	48.289	1	58.119	2	7.948	2	17.778	2	27.607	1	0.003
2	1	18.964	1	28.794	1	38.623	1	48.453	1	58.282	2	8.112	2	17.941	2	27.771	2	.005
3	1	19.128	1	28.958	1	38.787	1	48.617	1	58.446	2	8.276	2	18.105	2	27.935	3	.008
4	1	19.292	1	29.121	1	38.951	1	48.780	1	58.610	2	8.440	2	18.269	2	28.099	4	.011
5	1	19.456	1	29.285	1	39.115	1	48.944	1	58.774	2	8.603	2	18.433	2	28.263	5	.014
6	1	19.619	1	29.449	1	39.279	1	49.108	1	58.938	2	8.767	2	18.597	2	28.426	6	.016
7	1	19.783	1	29.613	1	39.442	1	49.272	1	59.101	2	8.931	2	18.761	2	28.590	7	.019
8	1	19.947	1	29.777	1	39.606	1	49.436	1	59.265	2	9.095	2	18.924	2	28.754	8	.022
9	1	20.111	1	29.940	1	39.770	1	49.600	1	59.429	2	9.259	2	19.088	2	28.918	9	.025
10	1	20.275	1	30.104	1	39.934	1	49.763	1	59.593	2	9.423	2	19.252	2	29.082	10	.027
11	1	20.439	1	30.268	1	40.098	1	49.927	1	59.757	2	9.586	2	19.416	2	29.245	11	.030
12	1	20.602	1	30.432	1	40.261	1	50.091	1	59.921	2	9.750	2	19.580	2	29.409	12	.033
13	1	20.766	1	30.596	1	40.425	1	50.255	2	0.084	2	9.914	2	19.744	2	29.573	13	.035
14	1	20.930	1	30.760	1	40.589	1	50.419	2	0.248	2	10.078	2	19.907	2	29.737	14	0.38
15	1	21.094	1	30.923	1	40.753	1	50.583	2	0.412	2	10.242	2	20.071	2	29.901	15	0.41
16	1	21.258	1	31.087	1	40.917	1	50.746	2	0.576	2	10.405	2	20.225	2	30.065	16	.044
17	1	21.422	1	31.251	1	41.081	1	50.910	2	0.740	2	10.569	2	20.399	2	30.228	17	.046
18	1	21.585	1	31.415	1	41.244	1	51.074	2	0.904	2	10.733	2	20.563	2	30.392	18	.049
19	1	21.749	1	31.579	1	41.408	1	51.238	2	1.067	2	10.897	2	20.727	2	30.556	19	.052
20	1	21.913	1	31.743	1	41.572	1	51.402	2	1.231	2	11.061	2	20.890	2	39.720	20	.055
21	1	22.077	1	31.906	1	41.736	1	51.565	2	1.395	2	11.225	2	21.054	2	30.884	21	.057
22	1	22.241	1	32.070	1	41.900	1	51.729	2	1.559	2	11.388	2	21.218	2	31.048	22	.060
23	1	22.404	1	32.234	1	42.064	1	51.893	2	1.723	2	11.552	2	21.382	2	31.211	23	.063
24	1	22.568	1	32.398	1	42.227	1	52.057	2	1.887	2	11.716	2	21.546	2	31.375	24	.066
25	1	22.732	1	32.562	1	42.391	1	52.221	2	2.050	2	11.880	2	21.709	2	31.539	25	.068
26	1	22.896	1	32.726	1	42.555	1	52.385	2	2.214	2	12.044	2	21.873	2	31.703	26	.071
27	1	23.060	1	32.889	1	42.719	1	52.548	2	2.378	2	12.208	2	22.037	2	31.867	27	.074
28	1	23.224	1	33.053	1	42.883	1	52.712	2	2.542	2	12.371	2	22.201	2	32.031	28	.076
29	1	23.387	1	33.217	1	43.047	1	52.876	2	2.706	2	12.535	2	22.365	2	32.194	29	.079
30	1	23.551	1	33.381	1	43.210	1	53.040	2	2.869	2	12.699	2	22.529	2	32.358	30	.082
31	1	23.715	1	33.545	1	43.374	1	53.204	2	3.033	2	12.863	2	22.692	2	32.522	31	.085
32	1	23.879	1	33.708	1	43.538	1	53.368	2	3.197	2	13.027	2	22.856	2	32.686	32	.087
33	1	24.043	1	33.872	1	43.702	1	53.531	2	3.361	2	13.191	2	23.020	2	32.850	33	.090
34	1	24.207	1	34.036	1	43.866	1	53.695	2	3.525	2	13.354	2	23.184	2	33.013	34	.093
35	1	24.370	1	34.200	1	44.029	1	53.859	2	3.689	2	13.518	2	23.348	2	33.177	35	.096
36	1	24.534	1	34.364	1	44.193	1	54.023	2	3.852	2	13.682	2	23.512	2	33.341	36	.098
37	1	24.698	1	34.528	1	44.357	1	54.187	2	4.016	2	13.846	2	23.675	2	33.505	37	.101
38	1	24.862	1	34.691	1	44.521	1	54.531	2	4.180	2	14.010	2	23.839	2	33.669	38	.104
39	1	25.026	1	34.855	1	44.685	1	54.514	2	4.344	2	14.173	2	24.003	2	33.833	39	.106
40	1	25.190	1	35.019	1	44.849	1	54.678	2	4.508	2	14.337	2	24.167	2	33.996	40	.109
41	1	25.353	1	35.183	1	45.012	1	54.842	2	4.672	2	14.501	2	24.331	2	34.160	41	.112
42	1	25.517	1	35.347	1	45.176	1	55.006	2	4.835	2	14.665	2	24.495	2	34.324	42	.115
43	1	25.681	1	35.511	1	45.340	1	55.170	2	4.999	2	14.829	2	24.658	2	34.488	43	.117
44	1	25.845	1	35.674	1	45.504	1	55.333	2	5.163	2	14.993	2	24.822	2	34.652	44	.120
45	1	26.009	1	35.838	1	45.668	1	55.497	2	5.327	2	15.156	2	24.986	2	34.816	45	.123
46	1	26.172	1	36.002	1	45.832	1	55.661	2	5.491	2	15.320	2	25.150	2	34.979	46	.126
47	1	26.336	1	36.166	1	45.995	1	55.825	2	5 655	2	15·484	2	25.314	2	35.143	47	.128
48	1	26.500	1	36.330	1	46.159	1	55.989	2	5.818	2	15.648	2	25.477	2	35.307	48	.131
49	1	26.664	1	36.493	1	46.323	1	56.153	2	5.982	2	15.812	2	25 641	2	35.471	49	.134
50	1	26.828	1	36.657	1	46.487	1	56.316	2	6.146	2	15.976	2	25.805	2	35.635	50	.137
51	1	26.992	1	36.821	1	46.651	1	56.480	2	6.310	2	16.139	2	25.969	2	35.798	51	.139
52	1	27.155	1	36.985	1	46.815	1	56.644	2	6.474	2	16.303	2	26.133	2	35.962	52	.142
53	1	27.319	1	37.149	1	46.978	1	56.808	2	6.637	2	16.467	2	26.297	2	36.126	53	.145
54	1	27.483	1	37.313	1	47.142	1	56.972	2	6.801	2	16.631	2	26.460	2	36.290	54	.147
55	1	27.647	1	37.476	1	47.306	1	57.136	2	6.965	2	16.795	2	26.624	2	36.454	55	.150
56	1	27.811	1	37.640	1	47.470	1	57.299	2	7.129	2	16.959	2	26.788	2	36.618	56	.153
57	1	27.975	1	37.804	1	47.634	1	57.463	2	7.293	2	17.122	2	26.952	2	36.781	57	.156
58	1	28.138	1	37.968	1	47.797	1	57.627	2	7.457	2	17.286	2	27.116	2	36.945	58	.158
59	1	28.302	1	38.132	1	47.961	1	57.791	2	7.620	2	17.450	2	27.280	2	36.109	59	0.161

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.755	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995		
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	.063
24	0 3.943	0 13.799	0 23·656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$8^{\text{h.}}$	$9^{\text{h.}}$	$10^{\text{h.}}$	$11^{\text{h.}}$	$12^{\text{h.}}$	$13^{\text{h.}}$	$14^{\text{h.}}$	$15^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	·011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50 064	1 59.920	2 9.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12 570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54 335	2 4.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27 066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36 389	52	.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162

TABLE IV.

TABLE GIVING THE CORRECTIONS OF *A* AND *B* WHICH DEPEND ON THE ARGUMENTS 2☾, AND ☾—Γ′.

In units of the *fifth* decimal for *A*, and of the *fourth* for *B*.

Arg. (2☾)	*A*☾	*B*☾	Arg. (2☾)	*A*☾	*B*☾	Arg. (2☾)	*A*☾	*B*☾	Arg. (☾—Γ′)	*A*′☾
d			d			d			d	
0.0	— 0	—886	4.6	—347	+459	9.2	+359	+410	0	+ 0
0.1	19	885	4.7	337	493	9.3	367	374	1	30
0.2	37	882	4.8	326	526	9.4	374	335	2	59
0.3	55	877	4.9	314	558	9.5	381	298	3	85
0.4	74	870	5.0	302	589	9.6	387	259	4	106
0.5	92	862	5.1	289	619	9.7	392	221	5	122
0.6	111	852	5.2	277	648	9.8	396	180	6	132
0.7	128	841	5.3	263	675	9.9	400	140	7	135
0.8	145	827	5.4	248	701	10.0	403	101	8	130
0.9	163	811	5.5	232	725	10.1	404	59	9	119
1.0	180	793	5.6	217	748	10.2	405	+ 19	10	102
1.1	196	775	5.7	201	769	10.3	405	— 22	11	80
1.2	212	754	5.8	185	788	10.4	404	62	12	53
1.3	228	732	5.9	168	806	10.5	402	103	13	+ 23
1.4	243	707	6.0	151	822	10.6	400	143	14	— 7
1.5	258	682	6.1	133	837	10.7	396	183	15	37
1.6	272	657	6.2	116	849	10.8	392	224	16	66
1.7	285	628	6.3	98	859	10.9	387	263	17	90
1.8	298	598	6.4	79	868	11.0	380	301	18	110
1.9	310	569	6.5	61	875	11.1	374	338	19	125
2.0	322	537	6.6	42	881	11.2	367	376	20	134
2.1	333	503	6.7	24	884	11.3	359	412	21	134
2.2	344	470	6.8	— 6	886	11.4	350	449	22	129
2.3	353	435	6.9	+ 13	885	11.5	340	483	23	116
2.4	362	399	7.0	32	883	11.6	329	516	24	97
2.5	370	362	7.1	49	879	11.7	317	549	25	74
2.6	376	324	7.2	68	873	11.8	306	581	26	47
2.7	383	285	7.3	86	865	11.9	293	610	27	— 17
2.8	389	247	7.4	105	855	12.0	281	640	28	+ 13
2.9	394	209	7.5	123	844	12.1	267	667	29	+ 43
3.0	398	169	7.6	140	831	12.2	252	693		
3.1	401	129	7.7	158	815	12.3	237	717		
3.2	403	88	7.8	175	799	12.4	221	741		
3.3	404	46	7.9	191	781	12.5	206	762		
3.4	405	— 6	8.0	207	761	12.6	190	782		
3.5	405	+ 35	8.1	223	738	12.7	174	800		
3.6	404	76	8.2	239	715	12.8	156	817		
3.7	402	116	8.3	254	691	12.9	138	833		
3.8	399	155	8.4	268	665	13.0	121	845		
3.9	395	196	8.5	282	637	13.1	104	856		
4.0	390	235	8.6	294	607	13.2	85	866		
4.1	385	274	8.7	306	578	13.3	67	873		
4.2	378	312	8.8	319	546	13.4	48	879		
4.3	372	350	8.9	330	514	13.5	30	883		
4.4	364	388	9.0	341	480	13.6	+ 11	885		
4.5	—356	+424	9.1	+350	+446	13.7	— 7	—885		

Multiples of the Period of (2 ☾)	
	d
1	13.661
2	27.322
3	40.982

Multiples of the Period of (☾—Γ′)	
	d
1	27.55
2	55.11

Arguments. ***Washington Mean Noon.***

1878.	Arg. (2☾)	Arg. (☾—Γ′)	1878.	Arg. (2☾)	Arg. (☾—Γ′)	Remarks.
	d	d		d	d	
Jan. 0	4.623	6.25	Aug. 0	11.711	25.37	To the argument for the beginning of any month, add the day of the month and Washington mean time, and subtract the largest contained multiple of the period.
Feb. 0	8.301	9.70	Sept. 0	1.729	1.26	
March 0	8.980	10.14	Oct. 0	4.407	3.71	
April 0	12.658	13.58	Nov. 0	8.085	7.15	
May 0	1.676	16.03	Dec. 0	10.763	9.60	
June 0	5.354	19.47	1879.			
July 0	8.032	21.92	Jan. 0	0.781	13.04	

TABLE V.

TABLE GIVING THE CORRECTIONS OF *A* AND *B* DEPENDING ON THE SMALL TERMS OF THE NUTATION.

WASHINGTON MEAN MIDNIGHT.

1878.	Δ *A*.	Δ *B*.	1878.	Δ *A*.	Δ *B*.	1878.	Δ *A*.	Δ *B*.
Jan. 0	−.00028	+0″.0008	May 5	+.00033	+0″.0003	Sept. 2	+.00001	+0″.0113
5	28	14	10	33	− 10	7	− 8	106
10	27	20	15	32	21	12	15	95
15	27	26	20	29	32	17	21	81
20	27	32	25	25	42	22	27	66
25	26	38	30	19	50	27	32	49
30	25	43	June 4	12	55	Oct. 2	35	33
Feb. 4	24	47	9	+ 5	57	7	37	+ 11
9	23	51	14	− 2	55	12	37	− 5
14	21	55	19	9	50	17	36	19
19	19	58	24	16	42	22	35	31
24	17	62	29	22	32	27	33	41
March 1	14	65	July 4	28	18	Nov. 1	30	47
6	11	68	9	33	− 4	6	26	51
11	7	70	14	36	+ 13	11	22	53
16	− 3	71	19	38	29	16	17	53
21	+ 1	71	24	39	46	21	12	51
26	6	70	29	39	63	26	8	47
31	10	67	Aug. 3	37	78	Dec. 1	+ 4	41
April 5	15	62	8	34	92	6	0	34
10	19	56	13	28	103	11	− 1	23
15	23	49	18	21	112	16	2	14
20	27	38	23	14	115	21	3	− 4
25	30	28	28	−.00007	+0.0116	26	4	+ 7
30	+.00032	+0.0016				31	−.00005	+0.0017

$$
\begin{aligned}
\Delta A = {} & +.00025 \sin (2 \odot - \Omega) + .00009 \sin (2\,\Gamma' - \Omega) \\
& +.00010 \sin 2 (\odot - \Gamma') + .00005 \cos \Gamma' \\
& -.00005 \sin 2 (\odot - \Omega) + .00004 \sin 2\,\Gamma' \\
& -.00011 \sin (3 \odot - \Gamma)
\end{aligned}
$$

$$
\begin{aligned}
\Delta B = {} & +0''.0067 \cos (2 \odot - \Omega) \\
& -0.0027 \cos (3 \odot - \Gamma) \\
& +0.0024 \cos (2\,\Gamma' - \Omega) \\
& -0.0023 \sin \Gamma' \\
& +0.0008 \cos 2\,\Gamma'
\end{aligned}
$$

These terms are included in Log. A and Log. B, *f*, G, and Log. *g*, pages 249–257.

TABLE VI.

TABLES FOR FINDING THE REDUCTIONS OF MEAN TO APPARENT RIGHT ASCENSIONS WHICH DEPEND ON 2☾ AND ☾−Γ′.

Hor. Arg. = Star's Right Ascension.

Arg. (2 ☾)	Δ a	Δ″a.													Arg. (2 ☾)
		0^h	1^h	2^h	3^h	4^h	5^h	6^h	7^h	8^h	9^h	10^h	11^h	12^h	
d	s	s													d
0.0	-.000	-.0059	-57	-51	-42	-29	-15	-00	+15	+29	+42	+51	+57	+59	0.0
0.5	03	57	59	56	50	39	26	12	+03	18	32	44	52	57	0.5
1.0	05	53	58	58	54	47	37	24	-10	+05	20	34	45	53	1.0
1.5	08	45	53	57	57	53	45	35	22	-07	+07	22	35	45	1.5
2.0	10	36	46	52	55	55	51	43	32	19	-06	+09	23	36	2.0
2.5	11	24	36	45	52	54	54	49	42	31	18	-04	+11	24	2.5
3.0	12	- 11	25	36	45	51	54	53	49	40	30	17	-03	+11	3.0
3.5	12	+ 02	-12	25	37	46	51	54	52	48	39	29	16	-02	3.5
4.0	12	15	+02	-13	26	37	46	52	54	53	48	39	29	15	4.0
4.5	11	28	15	00	14	27	39	48	53	55	53	48	40	28	4.5
5.0	09	39	27	+14	-01	15	29	40	49	55	56	54	48	39	5.0
5.5	07	48	39	26	+12	-02	18	31	42	51	56	57	55	48	5.5
6.0	05	54	48	37	24	+10	-05	21	33	45	53	57	59	54	6.0
6.5	-.002	58	54	47	36	22	+07	-08	23	36	47	55	59	58	6.5
7.0	+.001	59	58	53	45	33	19	+04	-11	25	39	49	56	59	7.0
7.5	04	56	59	57	52	42	30	16	+01	14	28	41	50	56	7.5
8.0	06	51	58	58	55	49	39	28	14	-01	16	30	42	51	8.0
8.5	09	42	51	55	57	54	47	37	25	+11	-03	18	31	42	8.5
9.0	10	32	43	50	55	55	52	45	36	23	+09	-05	20	32	9.0
9.5	12	20	33	43	50	54	54	51	44	34	22	+08	-07	20	9.5
10.0	12	+ 07	21	32	43	50	53	53	50	43	33	21	+07	-07	10.0
10.5	12	- 07	+07	21	33	43	50	53	53	50	43	32	21	+07	10.5
11.0	12	20	-07	+08	22	34	44	51	54	54	50	43	33	20	11.0
11.5	10	32	20	-05	+09	23	36	45	52	55	55	50	43	32	11.5
12.0	09	42	31	18	-03	+11	25	37	47	54	57	55	51	42	12.0
12.5	06	51	43	30	16	-01	14	27	39	49	55	58	58	51	12.5
13.0	04	56	50	41	28	14	+01	16	31	42	52	57	59	56	13.0
13.5	+.001	59	56	49	39	26	-11	+04	19	32	45	53	58	59	13.5
14.0	-.002	-.0058	-59	-55	-47	-36	-23	-08	+07	+22	+36	+46	+54	+58	14.0
		12^h	13^h	14^h	15^h	16^h	17^h	18^h	19^h	20^h	21^h	22^h	23^h	24^h	

Arg.(☾—Γ′)	Δ′a	Δ‴a						
		0^h 12^h	1^h 11^h	2^h 10^h	3^h 9^h	4^h 8^h	5^h 7^h	6^h 6^h
d	s	s						
0	+.000	.0000	+0	+0	+0	+0	+0	+0
1	1	0	1	2	3	4	4	4
2	2	0	2	4	6	7	8	8
3	3	0	3	6	8	10	11	11
4	3	0	4	7	10	12	14	14
5	4	0	4	8	11	14	16	16
6	4	0	5	9	13	15	17	18
7	4	0	5	9	13	16	18	18
8	4	0	4	9	12	15	17	17
9	4	0	4	8	11	14	15	16
10	3	0	3	7	10	12	13	14
11	2	0	3	5	8	9	10	11
12	2	0	2	4	5	6	7	7
13	1	0	+1	+2	+2	+3	+3	+3
14	+.000	.0000	0	0	-1	-1	-1	-1
		12^h 24^h	13^h 23^h	14^h 22^h	15^h 21^h	16^h 20^h	17^h 19^h	18^h 18^h

Arg.(☾—Γ′)	Δ′a	Δ‴a						
		0^h 12^h	1^h 11^h	2^h 10^h	3^h 9^h	4^h 8^h	5^h 7^h	6^h 6^h
d	s	s						
14	-.000	.0000	-0	-0	-1	-1	-1	-1
15	1	0	1	2	3	3	4	4
16	2	0	2	4	6	8	9	9
17	3	0	3	6	9	10	12	12
18	3	0	4	7	10	13	14	15
19	4	0	4	8	12	14	16	17
20	4	0	5	9	13	15	17	18
21	4	0	5	9	13	15	17	18
22	4	0	4	9	12	15	17	17
23	4	0	4	8	11	13	15	15
24	3	0	3	7	9	11	13	13
25	2	0	3	5	7	9	10	10
26	1	0	2	3	4	5	6	6
27	1	0	-1	-1	-2	-2	-2	-2
28	-.000	.0000	0	+1	+1	+2	+2	+2
		12^h 24^h	13^h 23^h	14^h 22^h	15^h 21^h	16^h 20^h	17^h 19^h	18^h 18^h

Δ″a and Δ‴a are to be multiplied by tan δ and their signs changed when $a > 12^h$.
The Arguments, (2☾) and (☾—Γ′), are given in Table IV. for the beginning of each month.

TABLE VII.

TABLES FOR FINDING THE REDUCTIONS OF MEAN TO APPARENT DECLINATIONS WHICH DEPEND ON 2 ☾ AND ☾—Γ′.

Hor. Arg. = Star's Right Ascension.

Arg. (2☾)	$\triangle\delta$													Arg. (2☾)
	0^h	1^h	2^h	3^h	4^h	5^h	6^h	7^h	8^h	9^h	10^h	11^h	12^h	
d	″	″	″	″	″	″	″	″	″	″	″	″	″	d
0.0	-.00	+.02	+.04	+.06	+.08	+.08	+.09	+.08	+.08	+.06	+.04	+.02	+.00	0.0
0.5	.02	.00	.02	.05	.07	.08	.09	.09	.08	.07	.06	.04	.02	0.5
1.0	.04	-.01	+.01	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	1.0
1.5	.05	.03	-.01	+.01	.03	.05	.07	.08	.09	.08	.08	.07	.05	1.5
2.0	.06	.05	.03	-.01	+.01	.03	.05	.07	.08	.08	.08	.08	.06	2.0
2.5	.07	.06	.05	.03	-.01	+.02	.04	.05	.07	.08	.08	.08	.07	2.5
3.0	.08	.07	.06	.04	.03	.00	+.02	.04	.05	.07	.08	.08	.08	3.0
3.5	.08	.08	.07	.05	.04	-.02	-.01	+.02	.04	.05	.07	.08	.08	3.5
4.0	.08	.08	.08	.07	.06	.04	.02	.00	+.02	.04	.06	.07	.08	4.0
4.5	.07	.08	.08	.08	.08	.06	.05	-.02	.00	+.02	.04	.06	.07	4.5
5.0	.06	.07	.08	.08	.08	.07	.06	.04	-.02	.00	+.02	.04	.06	5.0
5.5	.05	.06	.08	.08	.09	.08	.07	.06	.04	-.02	.00	.03	.05	5.5
6.0	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	-.02	+.01	.03	6.0
6.5	-.01	.03	.05	.07	.08	.09	.09	.08	.07	.05	.03	-.01	+.01	6.5
7.0	+.01	-.02	.04	.06	.07	.08	.09	.09	.08	.07	.05	.03	-01	7.0
7.5	.02	.00	-.02	.04	.06	.07	.08	.09	.08	.08	.06	.04	.02	7.5
8.0	.04	+.02	.00	-.02	.04	.06	.08	.08	.09	.08	.07	.06	.04	8.0
8.5	.06	.04	+.01	.00	.03	.05	.06	.08	.08	.08	.08	.07	.06	8.5
9.0	.07	.05	.03	+.01	-.01	.03	.05	.06	.08	.08	.08	.08	.07	9.0
9.5	.08	.07	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	.08	.08	9.5
10.0	.08	.08	.06	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	.08	10.0
10.5	.08	.08	.07	.06	.05	.03	+.01	-.01	.03	.05	.06	.07	.08	10.5
11.0	.08	.08	.08	.07	.06	.05	.03	+.01	-.01	.03	.05	.07	.08	11.0
11.5	.07	.08	.08	.08	.07	.06	.05	.03	+.01	-.01	.04	.05	.07	11.5
12.0	.06	.07	.08	.08	.08	.08	.06	.05	.03	+.01	-.02	.04	.06	12.0
12.5	.04	.06	.07	.08	.09	.08	.08	.06	.05	.02	.00	-.02	.04	12.5
13.0	+.02	.05	.06	.08	.09	.09	.08	.08	.06	.04	+.02	.00	-.02	13.0
13,5	.00	.03	.05	.07	.08	.09	.09	.08	.07	.06	.04	+.02	.00	13.5
14.0	-.01	+.01	+.03	+.05	+.07	+.08	+.09	+.09	+.08	+.07	+.05	+.03	+.01	14.0
	12^h	13^h	14^h	15^h	16^h	17^h	18^h	19^h	20^h	21^h	22^h	23^h	24^h	

Arg. (☾—Γ′)	$\triangle'\delta$						
	0^h 24^h	1^h 23^h	2^h 22^h	3^h 21^h	4^h 20^h	5^h 19^h	6^h 18^h
d	″	″	″	″	″	″	″
0	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	0.00
1	.01	.01	.01	.00	.00	.00	.00
2	.01	.01	.01	.01	.01	.00	.00
3	.02	.02	.01	.01	.01	.00	.00
4	.02	.02	.02	.01	.01	.00	.00
5	.02	.02	.02	.02	.01	.01	.00
6	.03	.03	.02	.02	.01	.01	.00
7	.03	.03	.02	.02	.01	.01	.00
8	.03	.02	.02	.02	.01	.01	.00
9	.02	.02	.02	.02	.01	.01	.00
10	.02	.02	.02	.01	.01	.00	.00
11	.02	.02	.01	.01	.01	.00	.00
12	.01	.01	.01	.01	.01	.00	.00
13	.01	.00	.00	.00	.00	.00	·00
14	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	0.00
	12^h 12^h	11^h 13^h	10^h 14^h	9^h 15^h	8^h 16^h	7^h 17^h	6^h 18^h

Arg. (☾—Γ′)	$\triangle'\delta$						
	0^h 24^h	1^h 23^h	2^h 22^h	3^h 21^h	4^h 20^h	5^h 19^h	6^h 18^h
d	″	″	″	″	″	″	″
14	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
15	.01	.01	.01	.00	.00	.00	.00
16	.01	.01	.01	.01	.01	.00	.00
17	.02	.02	.02	.01	.01	.00	.00
18	.02	.02	.02	.02	.01	.01	.00
19	.02	.02	.02	.02	.01	.01	.00
20	.03	.03	.02	.02	.01	.01	.00
21	.03	.03	.02	.02	.01	.01	.00
22	.03	.02	.02	.02	.01	.01	.00
23	.02	.02	.02	.02	.01	.01	.00
24	.02	.02	.02	.01	.01	.00	.00
25	.01	.01	.01	.01	.01	.00	.00
26	.01	.01	.01	.01	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00
28	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
	12^h 12^h	11^h 13^h	10^h 14^h	9^h 15^h	8^h 16^h	7^h 17^h	6^h 18^h

Change the signs of $\triangle\delta$ and $\triangle'\delta$ when a is found at the bottom of the Table.
The Arguments, (2☾) and (☾—Γ′), are given in Table IV. for the beginning of each month.

TABLE VIII.

REDUCTION OF THE MEAN PLACES OF FUNDAMENTAL STARS IN THE STAR TABLES OF THE AMERICAN EPHEMERIS TO NEWCOMB'S RIGHT ASCENSIONS* AND AUWERS' DECLINATIONS.†

t denotes the number of years from 1870.0.

	R. A.	$\Delta\alpha$		$\Delta\delta$	
	h	s	s	″	″
α Andromedæ	0	+0.029	+.0003 *t*	—0.45	—.0052 *t*
γ Pegasi	0	+ .014	—.0008 *t*	— .54	—.0075 *t*
α Cassiopeæ	0	. . .	. . .	— .24	—.0017 *t*
α Ursæ Minoris	1	. . .	. . .	+ .02	—.0017 *t*
α Arietis	1	+ .014	—.0006 *t*	— .06	+.0026 *t*
α Ceti	2	+ .012	—.0001 *t*	— .01	+.0007 *t*
α Persei	3	. . .	. . .	+ .05	+.0047 *t*
α Tauri	4	— .007	—.0002 *t*	— .39	—.0030 *t*
α Aurigæ	5	— .005	—.0005 *t*	— .02	+.0012 *t*
β Orionis	5	+ .003	—.0002 *t*	— .35	—.0033 *t*
β Tauri	5	+ .013	+.0002 *t*	— .23	—.0051 *t*
α Orionis	5	— .019	—.0003 *t*	— .04	+.0058 *t*
α Canis Majoris	6	— .003	—.0007 *t*	.00	.0000 *t*
α^2 Geminorum	7	. . .	. . .	+ .60	+.0170 *t*
α Canis Minoris	7	— .086	—.0018 *t* ‡	+ .22	+.0114 *t* ‖
β Geminorum	7	— .017	—.0003 *t*	— .57	—.0111 *t*
α Hydræ	9	— .015	—.0002 *t*	— .39	—.0015 *t*
α Leonis	10	— .036	—.0010 *t*	— .71	—.0137 *t*
α Ursæ Majoris	10	. . .	. . .	+ .07	—.0023 *t*
β Leonis	11	— .008	—.0004 *t*	— .60	—.0121 *t*
γ Ursæ Majoris	11	. . .	. . .	— .19	—.0034 *t*
α Virginis	13	— .023	—.0012 *t*	— .43	—.0185 *t*
η Ursæ Majoris	13	. . .	. . .	— .15	—.0044 *t*
α Bootis	14	+ .018	+.0002 *t*	— .73	—.0133 *t*
α^2 Libræ	14	+ .001	.0000 *t*	— .66	—.0061 *t*
β Ursæ Minoris	14	. . .	. . .	+ .15	—.0036 *t*
α Coronæ Borealis	15	+ .017	—.0005 *t*	— .34	—.0032 *t*
α Serpentis	15	+ .030	+.0001 *t*	— .23	+.0014 *t*
α Scorpii	16	— .019	—.0012 *t*	— .71	—.0011 *t*
α^1 Herculis	17	+ .028	—.0004 *t*	— .55	—.0057 *t*
α Ophiuchi	17	+ .042	+.0001 *t*	+ .01	+.0055 *t*
γ Draconis	17	. . .	. . .	— .39	—.0023 *t*
δ Ursæ Minoris	18	. . .	. . .	— .32	—.0151 *t*
α Lyræ	18	+ .029	—.0004 *t*	— .32	—.0087 *t*
γ Aquilæ	19	+ .030	—.0004 *t*	— .16	+.0018 *t*
α Aquilæ	19	+ .043	—.0003 *t*	— .28	+.0023 *t*
β Aquilæ	19	+ .042	+.0003 *t*	— .63	—.0081 *t*
α^2 Capricorni	20	+ .051	+.0006 *t*	— .46	—.0012 *t*
α Cygni	20	+ .040	.0000 *t*	— .05	+.0009 *t*
α Cephei	21	. . .	. . .	+ .14	+.0032 *t*
β Cephei	21	. . .	. . .	— .13	—.0040 *t*
α Aquarii	21	+ .024	—.0003 *t*	+ .27	+.0185 *t*
α Piscis Australis	22	+ .015	—.0008 *t*	— .53	—.0046 *t*
α Pegasi	22	+ .026	—.0005 *t*	— .36	+.0005 *t*

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* *On the Right Ascensions of fundamental stars*, by Simon Newcomb, (*Washington Astronomical Observations*, 1870, Appendix III.)

† *Astronomische Nachrichten*, No. 1550.

‡ + the periodic term of *q*, (*Ast. Nach.*, No. 1373.)

‖ + *r*, (*Ast. Nach.*, No. 1373.)

SUPPLEMENT TO THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC,

FOR THE YEARS

1878, 1879, 1880, and 1881.

TABLES FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

The formula,* on which these tables are based, is

$$L = h - p \cos t + \tfrac{1}{2} p^2 \sin 1'' \sin^2 t \tan h$$
$$- \tfrac{1}{3} p^3 \sin^2 1'' \cos t \sin^2 t + \tfrac{1}{8} p^4 \sin^3 1'' \sin^4 t \tan^3 h;$$

in which $L =$ the latitude of the place, and
$h =$ the true altitude,
$p =$ the polar distance, and
$t =$ the hour angle of the star.

Table A contains for the declination 88° 40′, or $p_0 = 1° 20' = 4800''$, the *first correction*,

$$A = -p_0 \cos t - \tfrac{1}{3} p^3_0 \sin^2 1'' \cos t \sin^2 t;$$

Argument, *the hour angle of the star*, or $24^h -$ the hour angle.

Table B contains the *second correction*,

$$B = \tfrac{1}{2} p^2_0 \sin 1'' \sin^2 t \tan h + \tfrac{1}{8} p^4_0 \sin^3 1'' \sin^4 t \tan^3 h;$$

Arguments, *the true altitude of the star* and the *hour angle*, or $24^h -$ the hour angle. This correction is always *additive*.

Table C contains the *third correction*,

$$C = \tfrac{1}{2} (p^2 - p^2_0) \sin 1'' \sin^2 t \tan h;$$

Arguments, B and *the declination of the star* from 88° 39′ 20″ to 88° 41′ 20″.

Table D contains the *fourth correction*,

$$-(p - p_0) \cos t - \tfrac{1}{3} (p^3 - p^3_0) \sin^2 1'' \cos t \sin^2 t;$$

Arguments, A and *the declination of the star* from 88° 39′ 20″ to 88° 41′ 20″.

The quantities are given to the nearest 0″.1 : a . placed after some of them indicates a doubt between the figure given and the next highest, or that the correct value is 0″.05 greater than that given. Thus, 3″.7 · indicates the actual value 3″.75.

The method of using these tables is as follows:

Reduce the observed altitude of the star to the true altitude, and the noted time of the observation to the sidereal time of the place.

Find from the Almanac the apparent right ascension and declination of the star at the time of observation.†

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* CHAUVENET'S *Spherical and Practical Astronomy*, Vol. I., p. 256.

† If great precision is aimed at, the tables in the Almanac may be interpolated for the hour angle at the prime meridian, *i. e.*, the local hour angle + the longitude; (west longitudes being regarded as positive.) The solar date with which to enter will be one day *later* than the astronomical day of observation in the case of a *west* hour angle, which added to the mean time of culmination gives more than 24^h or 1^d; and one day *earlier* in the case of an *east* hour angle, which is numerically greater than the mean time of culmination. In the American Ephemeris the mean time of culmination is given in tenths of a day.

LATITUDE BY ALTITUDES OF POLARIS.

Subtracting the right ascension from the sidereal time will give the star's hour angle *west* or +; subtracting the sidereal time from the right ascension will give the hour angle *east* or —. If more than 12^h, subtract it from 24^h and change the sign.

1. With this hour angle take out the *first correction*, *A*, from Table A, giving to it the sign — when the hour angle is numerically *less* than 6^h; the sign + when the hour angle is *greater* than 6^h.

2. With the hour angle and altitude take out the *second correction*,[*] *B*, from Table B. The sign of this correction is always +.

3. With *B* and the declination take out the *third correction*, *C*, from Table C, giving it the sign + when the declination is less than 88° 40′; — when the declination is greater than 88° 40′.

4. With *A* and the declination take out the *fourth correction*, *D*, from Table D, giving it the same sign as that of *A*, when the declination is less than 88° 40′; the opposite sign when the declination is greater than 88° 40′.

5. Combine these corrections with the true altitude according to their signs: the result is the latitude of the place of observation.

When great precision is required, or the intervals are great, it will be necessary to take out the *first* and *second corrections* for each observation separately; in other cases, the mean of the times may be used. The means of these two corrections may always be used for finding the *third* and *fourth corrections;* and these four quantities may be combined with the mean of the altitudes.

If the nearest 10″ suffices for each correction, they may be taken out with the nearest arguments without interpolation; and all but the *first* may be thus taken out when a precision of 3″ is required.

If a precision of 1′ is sufficient for each correction, as is ordinarily the case at sea, an hour angle within 3^m will suffice for Table A; Tables C and D may be neglected, and Table B used only when the altitude exceeds 47°.

Example.—1878, June 7, 1^h 16^m 35^s A. M., mean time, in longitude 30° West of Washington, suppose the corrected altitude of Polaris to be 47° 18′ 25″, required the latitude of the place.

				h	m	s
	Local astronomical mean time	June 6,		13	16	35.0
p. 326	Sidereal time at mean noon of June 6,			4	59	54.0
App'x, Table III,	corresponding to 13^h 16^m 35^s,		+		2	10.9
" "	" to the long. = + 2^h 0^m 0^s,		+			19.7
	Local sidereal time,			18	18	59.6
p. 264	*Polaris.* App't Dec. + 88° 39′ 27″.9	App't R. A.		1	13	30.7
		Hour angle	+	17	5	28.9
	(Hour angle at Washington, — 4^h 54^m)	or	—	6	54	31.1

The right ascension and declination are interpolated *back* 4^h 54^m = 0^d.2 from these given for June 6.8; or forward 19^h 6^m = 0^d.8 from these given for June 5.8.

		°	′	″
Corrected altitude,		47	18	25.0
Table A, corresponding to the hour angle,	*A* = +		18	51.2
" B, " " altitude and hour angle,	*B* = +			57.1
" C, " " declination and *B*,	*C* = +			0 7
" D, " " declination and *A*,	*D* = +			7.6
Latitude,	+	47	38	21.6

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[*] If the altitude is greater than 60°, this correction may be found by taking that for 45° and multiplying it by the tangent of the altitude; adding, if desirable, the second term in the expression for *B*, viz: $+0''.0076 \sin^4 t \tan^3 h$.

TABLE A.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

A = 1*st Correction.* Argument, *the star's hour angle,* (or 24h — *the star's hour angle.*)

	0h		1h		2h		3h		4h		5h		
m	° ′ ″	″	° ′ ″	″	° ′ ″	″	° ′ ″	″	° ′ ″	″	° ′ ″	″	m
0	-1 20 0.0	0.1	-1 17 16.5	5.5	-1 9 17.1	10.5	-0 56 34.4	14.8	-0 40 0.3	18.1	-0 20 42.5	20.2	60
1	19 59.9	0.1	17 11.0	5.5	9 6.6	10.6	56 19.6	14.9	39 42.2	18.2	20 22.3	20.3	59
2	19 59.8	0.2	17 5.5	5.7	8 56.0	10.7	56 4.7	15.0	39 24.0	18.3	20 2.0	20.3	58
3	19 59.6	0.3	16 59.8	5.7	8 45.3	10.7	55 49.7	15.0	39 5.7	18.3	19 41.7	20.3	57
4	19 59.3	0.4	16 54.1	5.8	8 34.6	10.8	55 34.7	15.1	38 47.4	18.3	19 21.4	20.3	56
5	-1 19 58.9	0.5	-1 16 48.3	5.9	-1 8 23.8	10.9	-0 55 19.6	15.2	-0 38 29.1	18.4	-0 19 1.1	20.4	55
6	19 58.4	0.6	19 42.4	6.0	8 12.9	11.0	55 4.4	15.2	38 10.7	18.4	18 40.7	20.4	54
7	19 57.8	0.7	16 36.4	6.1	8 1.9	11.1	54 49.2	15.3	37 52.2	18.5	18 20.3	20.4	53
8	19 57.1	0.8	16 30.3	6.1	7 50.8	11.1	54 33.9	15.3	37 33.8	18.5	17 59.9	20.4	52
9	19 56.3	0.9	16 24.2	6.3	7 39.7	11.2	54 18.6	15.4	37 15.3	18.6	17 39.5	20.4	51
10	-1 19 55.4	0.9	-1 16 17.9	6.3	-1 7 28.5	11.3	-0 54 3.2	15.5	-0 36 56.7	18.6	-0 17 19.1	20.5	50
11	19 54.5	1.1	16 11.6	6.5	7 17.2	11.4	53 47.7	15.6	36 38.1	18.6	16 58.6	20.5	49
12	19 53.4	1.1	16 5.1	6.5	7 5.8	11.4	53 32.1	15.6	36 19.5	18.7	16 38.1	20.5	48
13	19 52.3	1.3	15 58.6	6.6	6 54.4	11.5	53 16.5	15.6	36 0.8	18.7	16 17.6	20.5	47
14	19 51.0	1.3	15 52.0	6.7	6 42.9	11.6	53 0.9	15.7	35 42.1	18.8	15 57.1	20.5	46
15	-1 19 49.7	1.4	-1 15 45.3	6.7	-1 6 31.3	11.7	-0 52 45.2	15.8	-0 35 23.3	18.8	-0 15 36.6	20.6	45
16	19 48.3	1.5	15 38.6	6.9	6 19.6	11.8	52 29.4	15.8	35 4.5	18.8	15 16.0	20.5	44
17	19 46.8	1.6	15 31.7	6.9	6 7.8	11.8	52 13.6	15.9	34 45.6	18.9	14 55.5	20.6	43
18	19 45.2	1.7	15 24.8	7.1	5 56.0	11.9	51 57.7	16.0	34 26.8	19.0	14 34.9	20.6	42
19	19 43.5	1.8	15 17.7	7.1	5 44.1	11.9	51 41.7	16.0	34 7.8	18.9	14 14.3	20.6	41
20	-1 19 41.7	1.8	-1 15 10.6	7.2	-1 5 32.2	12.1	-0 51 25.7	16.1	-0 33 48.9	19.0	-0 13 53.7	20.7	40
21	19 39.9	2.0	15 3.4	7.3	5 20.1	12.1	51 9.6	16.1	33 29.9	19.1	13 33.0	20.6	39
22	19 37.9	2.0	14 56.1	7.4	5 8.0	12.2	50 53.5	16.2	33 10.8	19.1	13 12.4	20.7	38
23	19 35.9	2.2	14 48.7	7.4	4 55.8	12.3	50 37.3	16.2	32 51.7	19.1	12 51.7	20.7	37
24	19 33.7	2.2	14 41.3	7.6	4 43.5	12.3	50 21.1	16.3	32 32.6	19.1	12 31.0	20.7	36
25	-1 19 31.5	2.4	-1 14 33.7	7.6	-1 4 31.2	12.4	-0 50 4.8	16.4	-0 32 13.5	19.2	-0 12 10.3	20.7	35
26	19 29.1	2.4	14 26.1	7.7	4 18.8	12.5	49 48.4	16.4	31 54.3	19.2	11 49.6	20.7	34
27	19 26.7	2.5	14 18.4	7.8	4 6.3	12.6	49 32.0	16.5	31 35.1	19.3	11 28.9	20.8	33
28	19 24.2	2.6	14 10.6	7.9	3 53.7	12.6	49 15.5	16.5	31 15.8	19.3	11 8.1	20.7	32
29	19 21.6	2.7	14 2.7	8.0	3 41.1	12.7	48 59.0	16.6	30 56.5	19.3	10 47.4	20.8	31
30	-1 19 18.9	2.7	-1 13 54.7	8.0	-1 3 28.4	12.8	-0 48 42.4	16.7	-0 30 37.2	19.4	-0 10 26.6	20.7	30
31	19 16.2	2.9	13 46.7	8.2	3 15.6	12.9	48 25.7	16.7	30 17.8	19.4	10 5.9	20.8	29
32	19 13.3	3.0	13 38.5	8.2	3 2.7	12.9	48 9.0	16.6	29 58.4	19.5	9 45.1	20.8	28
33	19 10.3	3.0	13 30.3	8.3	2 49.8	13.0	47 52.3	16.8	29 38.9	19.4	9 24.3	20.8	27
34	19 7.3	3.2	13 22.0	8.4	2 36.8	13.1	47 35.5	16.9	29 19.5	19.5	9 3.5	20.9	26
35	-1 19 4.1	3.2	-1 13 13.6	8.5	-1 2 23.7	13.1	-0 47 18.6	16.9	-0 29 0.0	19.6	-0 8 42.6	20.8	25
36	19 0.9	3.3	13 5.1	8.5	2 10.6	13.2	47 1.7	17.0	28 40.4	19.5	8 21.8	20.8	24
37	18 57.6	3.4	12 56.6	8.7	1 57.4	13.3	46 44.7	17.0	28 20.9	19.6	8 1.0	20.9	23
38	18 54.2	3.5	12 47.9	8.7	1 44.1	13.4	46 27.7	17.1	28 1.3	19.7	7 40.1	20.8	22
39	18 50.7	3.6	12 39.2	8.8	1 30.7	13.4	46 10.6	17.1	27 41.6	19.6	7 19.3	20.9	21
40	-1 18 47.1	3.7	-1 12 30.4	8.9	-1 1 17.3	13.5	-0 45 53.5	17.2	-0 27 22.0	19.7	-0 6 58.4	20.8	20
41	18 43.4	3.8	12 21.5	8.9	1 3.8	13.6	45 36.3	17.2	27 2.3	19.8	6 37.6	20.9	19
42	18 39.6	3.8	12 12.6	9.1	0 50.2	13.6	45 19.1	17.3	26 42.5	19.7	6 16.7	20.9	18
43	18 35.8	4.0	12 3.5	9.1	0 36.6	13.7	45 1.8	17.3	26 22.8	19.8	5 55.8	20.9	17
44	18 31.8	4.0	11 54.4	9.3	0 22.9	13.8	44 44.5	17.4	26 3.0	19.8	5 34.9	20.9	16
45	-1 18 27.8	4.1	-1 11 45.1	9.3	-1 0 9.1	13.8	-0 44 27.1	17.5	-0 25 43.2	19.9	-0 5 14.0	20.9	15
46	18 23.7	4.2	11 35.8	9.3	-0 59 55.3	13.9	44 9.6	17.5	25 23.3	19.9	4 53.1	20.9	14
47	18 19.5	4.3	11 26.5	9.5	59 41.4	14.0	43 52.1	17.5	25 3.4	19.9	4 32.2	20.9	13
48	18 15.2	4.4	11 17.0	9.6	59 27.4	14.1	43 34.6	17.6	24 43.5	19.9	4 11.3	21.0	12
49	18 10.8	4.5	11 7.4	9.6	59 13.3	14.1	43 17.0	17.6	24 23.6	20.0	3 50.3	20.9	11
50	-1 18 6.3	4.6	-1 10 57.8	9.7	-0 58 59.2	14.2	-0 42 59.4	17.7	-0 24 3.6	20.0	-0 3 29.4	20.9	10
51	18 1.7	4.7	10 48.1	9.8	58 45.0	14.2	42 41.7	17.8	23 43.6	20.0	3 8.5	21.0	9
52	17 57.0	4.7	10 38.3	9.9	58 30.8	14.3	42 23.9	17.8	23 23.6	20.0	2 47.5	20.9	8
53	17 52.3	4.9	10 28.4	9.9	58 16.5	14.4	42 6.1	17.8	23 3.6	20.1	2 26.6	20.9	7
54	17 47.4	4.9	10 18.5	10.0	58 2.1	14.5	41 48.3	17.9	22 43.5	20.1	2 5.7	21.0	6
55	-1 17 42.5	5.0	-1 10 8.5	10.1	-0 57 47.6	14.5	-0 41 30.4	17.9	-0 22 23.4	20.1	-0 1 44.7	20.9	5
56	17 37.5	5.1	9 58.4	10.2	57 33.1	14.6	41 12.5	18.0	22 3.3	20.2	1 23.8	21.0	4
57	17 32.4	5.2	9 48.2	10.3	57 18.5	14.6	40 54.5	18.0	21 43.1	20.1	1 2.8	20.9	3
58	17 27.2	5.3	9 37.9	10.4	57 3.9	14.7	40 36.5	18.1	21 23.0	20.2	0 41.9	21.0	2
59	17 21.9	5.4	9 27.5	10.4	56 49.2	14.8	40 18.4	18.1	21 2.8	20.3	0 20.9	20.9	1
60	-1 17 16.5		-1 9 17.1		-0 56 34.4		-0 40 0.3		-0 20 42.5		-0 0 0.0		0
	11h		10h		9h		8h		7h		6h		

Change the sign to + when the argument is found at the bottom.

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B=*the* 2d *Correction*. This correction is always *additive*.

Star's Hour Angle.	STAR'S ALTITUDE.																				Star's Hour Angle.
	10°		15°		16°		17°		18°		19°		20°		21°		22°		23°		
h m	″		″		″		″		″		″		″		″		″		″		h m
0 0	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		12 0
10	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.0	.0	11 50
20	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.2	.2	0.2	.2	0.2	.2	40
30	0.2	.1	0.2	.1	0.3	.2	0.3	.2	0.3	.2	0.3	.2	0.3	.2	0.4	.2	0.4	.2	0.4	.2	30
40	0.3	.1	0.4	.2	0.5	.2	0.5	.2	0.5	.2	0.6	.3	0.6	.3	0.7	.3	0.7	.3	0.7	.3	20
50	0.5	.2	0.7	.3	0.7	.2	0.8	.3	0.8	.3	0.9	.3	1.0	.4	1.0	.4	1.0	.3	1.1	.4	10
1 0	0.7	.2	1.0	.3	1.1	.3	1.1	.3	1.2	.4	1.3	.4	1.4	.4	1.4	.4	1.5	.5	1.6	.5	0
10	0.9	.2	1.3	.3	1.4	.4	1.5	.4	1.6	.4	1.7	.4	1.8	.4	1.9	.5	2.0	.5	2.1	.5	10 50
20	1.1	.3	1.7	.4	1.9	.5	2.0	.5	2.1	.5	2.2	.5	2.4	.6	2.5	.6	2.6	.6	2.8	.7	40
30	1.4	.3	2.2	.5	2.3	.4	2.5	.5	2.7	.6	2.8	.6	3.0	.6	3.1	.6	3.3	.7	3.5	.7	30
40	1.8	.4	2.7	.5	2.9	.6	3.0	.5	3.2	.5	3.4	.6	3.6	.6	3.8	.7	4.0	.7	4.2	.7	20
50	2.1	.3	3.2	.5	3.4	.5	3.6	.6	3.9	.7	4.1	.7	4.3	.7	4.6	.8	4.8	.8	5.0	.8	10
2 0	2.5	.4	3.7	.5	4.0	.6	4.3	.7	4.5	.6	4.8	.7	5.1	.8	5.4	.8	5.6	.8	5.9	.9	0
10	2.8	.3	4.3	.6	4.6	.6	4.9	.6	5.2	.7	5.5	.7	5.9	.8	6.2	.8	6.5	.9	6.8	.9	9 50
20	3.2	.4	4.9	.6	5.3	.7	5.6	.7	6.0	.8	6.3	.8	6.7	.8	7.0	.8	7.4	.9	7.8	1.0	40
30	3.6	.5	5.5	.6	5.9	.6	6.3	.7	6.7	.7	7.1	.8	7.5	.8	7.9	.9	8.4	1.0	8.8	1.0	30
40	4.1	.5	6.2	.7	6.6	.7	7.0	.7	7.5	.8	7.9	.8	8.4	.9	8.9	1.0	9.3	0.9	9.8	1.0	20
50	4.5	.4	6.8	.6	7.3	.7	7.8	.8	8.3	.8	8.8	.9	9.3	.9	9.8	0.9	10.3	1.0	10.8	1.0	10
3 0	4.9	.4	7.5	.7	8.0	.7	8.5	.7	9.1	.8	9.6	.8	10.2	.9	10.7	0.9	11.3	1.0	11.8	1.0	0
10	5.3	.4	8.1	.6	8.7	.7	9.3	.8	9.8	.7	10.4	.8	11.0	.8	11.6	.9	12.3	1.0	12.9	1.1	8 50
20	5.8	.5	8.8	.7	9.4	.7	10.0	.7	10.6	.8	11.3	.9	11.9	.9	12.6	1.0	13.2	0.9	13.9	1.0	40
30	6.2	.4	9.4	.6	10.1	.7	10.7	.7	11.4	.8	12.1	.8	12.8	.9	13.5	0.9	14.2	1.0	14.9	1.0	30
40	6.6	.4	10.0	.6	10.7	.6	11.4	.7	12.2	.8	12.9	.8	13.6	.8	14.4	.9	15.1	0.9	15.9	1.0	20
50	7.0	.4	10.6	.6	11.4	.7	12.1	.7	12.9	.7	13.7	.8	14.5	.9	15.2	.8	16.0	.9	16.9	1.0	10
4 0	7.4	.4	11.2	.6	12.0	.6	12.8	.7	13.6	.7	14.4	.7	15.3	.8	16.1	.9	16.9	.9	17.8	0.9	0
10	7.7	.3	11.8	.6	12.6	.6	13.4	.6	14.3	.7	15.1	.7	16.0	.7	16.9	.8	17.7	.8	18.6	.8	7 50
20	8.1	.4	12.3	.5	13.1	.6	14.0	.6	14.9	.6	15.8	.7	16.7	.7	17.6	.7	18.5	.8	19.5	.8	40
30	8.4	.3	12.8	.5	13.7	.5	14.6	.6	15.5	.6	16.4	.6	17.3	.6	18.3	.7	19.3	.8	20.2	.7	30
40	8.7	.3	13.2	.4	14.1	.4	15.1	.5	16.0	.5	17.0	.6	17.9	.6	18.9	.6	19.9	.6	20.9	.7	20
50	9.0	.3	13.6	.4	14.6	.5	15.5	.4	16.5	.5	17.5	.5	18.5	.6	19.5	.6	20.5	.6	21.6	.7	10
5 0	9.2	.2	14.0	.4	14.9	.3	15.9	.4	16.9	.4	17.9	.4	19.0	.5	20.0	.5	21.1	.6	22.1	.5	0
10	9.4	.2	14.3	.3	15.3	.4	16.3	.4	17.3	.4	18.3	.4	19.4	.4	20.4	.4	21.5	.4	22.6	.5	6 50
20	9.6	.2	14.5	.2	15.5	.2	16.6	.3	17.6	.3	18.6	.3	19.7	.3	20.8	.4	21.9	.4	23.0	.4	40
30	9.7	.1	14.7	.2	15.7	.2	16.8	.2	17.8	.2	18.9	.3	20.0	.3	21.1	.3	22.2	.3	23.3	.3	30
40	9.8	.1	14.8	.1	15.9	.2	16.9	.1	18.0	.2	19.1	.2	20.2	.2	21.3	.2	22.4	.2	23.5	.2	20
50	9.8	.0	14.9	.1	16.0	.1	17.0	.1	18.1	.1	19.2	.1	20.3	.1	21.4	.1	22.5	.1	23.7	.2	10
6 0	9.8	.0	15.0	.1	16.0	.0	17.1	.1	18.1	.0	19.2	.0	20.3	.0	21.4	.0	22.6	.1	23.7	.0	6 0

TABLE C.

C=*the* 3d *Correction*. Hor. Arg., *the star's declination*. Vert. Arg., *B*=*the* 2d *Correction*.

B	88° 39′				88° 40′						88° 41′		
	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″	0″	10″	20″
″	″	″	″	″	″	″	″	″	″	″	″	″	″
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	−0.0	−0.1	−0.1	−0.2	−0.2	−0.2	−0.3	−0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0.2	0.0	−0.2	−0.4	−0.6	−0.8	−1.0	−1.2	−1.4	−1.7

NOTE.—Below 15° *B* is nearly proportional to the altitude.

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d *correction*. This correction is always *additive*.

Star's Hour Angle.	STAR'S ALTITUDE.																				Star's Hour Angle.
	24°		25°		26°		27°		28°		29°		30°		31°		32°		33°		
h m	″		″		″		″		″		″		″		″		″		″		h m
0 0	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		12 0
10	0.0	.0	0.0	.0	0.0	.0	0.0	.0	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	11 50
20	0.2	.2	0.2	.2	0.2	.2	0.2	.2	0.2	.1	0.2	.1	0.2	.1	0.3	.2	0.3	.2	0.3	.2	40
30	0.4	.2	0.4	.2	0.5	.3	0.5	.3	0.5	.3	0.5	.3	0.5	.3	0.6	.3	0.6	.3	0.6	.3	30
40	0.7	.3	0.8	.4	0.8	.3	0.9	.4	0.9	.4	0.9	.4	1.0	.5	1.0	.4	1.0	.4	1.1	.5	20
50	1.2	.5	1.2	.4	1.3	.5	1.3	.4	1.4	.5	1.4	.5	1.5	.5	1.6	.6	1.6	.6	1.7	.6	10
1 0	1.7	.5	1.7	.5	1.8	.5	1.9	.6	2.0	.6	2.1	.7	2.2	.7	2.2	.6	2.3	.7	2.4	.7	0
10	2.2	.5	2.3	.6	2.5	.7	2.6	.7	2.7	.7	2.8	.7	2.9	.7	3.0	.8	3.2	.9	3.3	.9	10 50
20	2.9	.7	3.0	.7	3.2	.7	3.3	.7	3.4	.7	3.6	.8	3.8	.9	3.9	.9	4.1	.9	4.2	.9	40
30	3.6	.7	3.8	.8	4.0	.8	4.2	.9	4.3	.9	4.5	.9	4.7	.9	4.9	1.0	5.1	1.0	5.3	1.1	30
40	4.4	.8	4.7	.9	4.9	.9	5.1	.9	5.3	1.0	5.5	1.0	5.8	1.1	6.0	1.1	6.2	1.1	6.5	1.2	20
50	5.3	.9	5.6	.9	5.8	.9	6.1	1.0	6.3	1.0	6.6	1.1	6.9	1.1	7.2	1.2	7.4	1.2	7.7	1.2	10
2 0	6.2	.9	6.5	.9	6.8	1.0	7.1	1.0	7.4	1.1	7.7	1.1	8.1	1.2	8.4	1.2	8.7	1.3	9.1	1.4	0
10	7.2	1.0	7.5	1.0	7.9	1.1	8.2	1.1	8.6	1.2	8.9	1.2	9.3	1.2	9.7	1.3	10.1	1.4	10.5	1.4	9 50
20	8.2	1.0	8.6	1.1	9.0	1.1	9.4	1.2	9.8	1.2	10.2	1.3	10.6	1.3	11.0	1.3	11.5	1.4	11.9	1.4	40
30	9.2	1.0	9.7	1.0	10.1	1.1	10.5	1.2	11.0	1.2	11.5	1.3	11.9	1.3	12.4	1.4	12.9	1.4	13.4	1.5	30
40	10.3	1.1	10.8	1.1	11.2	1.1	11.8	1.2	12.3	1.3	12.8	1.3	13.3	1.4	13.9	1.5	14.4	1.5	15.0	1.6	20
50	11.3	1.0	11.9	1.1	12.4	1.2	13.0	1.2	13.5	1.2	14.1	1.3	14.7	1.4	15.3	1.4	15.9	1.5	16.6	1.6	10
3 0	12.4	1.1	13.0	1.1	13.6	1.2	14.2	1.2	14.8	1.3	15.5	1.4	16.1	1.4	16.8	1.5	17.5	1.6	18.1	1.5	0
10	13.5	1.1	14.1	1.1	14.8	1.2	15.5	1.3	16.1	1.3	16.8	1.3	17.5	1.4	18.2	1.4	19.0	1.5	19.7	1.6	8 50
20	14.6	1.1	15.3	1.2	16.0	1.2	16.7	1.2	17.4	1.3	18.2	1.4	18.9	1.4	19.7	1.5	20.5	1.5	21.3	1.6	40
30	15.6	1.0	16.4	1.1	17.1	1.1	17.9	1.2	18.7	1.3	19.5	1.3	20.3	1.4	21.1	1.4	22.0	1.5	22.8	1.5	30
40	16.7	1.1	17.5	1.1	18.3	1.2	19.1	1.2	19.9	1.2	20.8	1.3	21.6	1.3	22.5	1.4	23.4	1.4	24.3	1.5	20
50	17.7	1.0	18.5	1.0	19.4	1.1	20.2	1.1	21.1	1.2	20.0	1.2	22.9	1.3	23.9	1.4	24.8	1.4	25.8	1.5	10
4 0	18.6	0.9	19.5	1.0	20.4	1.0	21.3	1.1	22.3	1.2	23.2	1.2	24.2	1.3	25.2	1.3	26.2	1.4	27.2	1.4	0
10	19.6	1.0	20.5	1.0	21.4	1.0	22.4	1.1	23.4	1.1	24.3	1.1	25.4	1.2	26.4	1.2	27.5	1.3	28.5	1.3	7 50
20	20.4	0.8	21.4	0.9	22.4	1.0	23.4	1.0	24.4	1.0	25.4	1.1	26.5	1.1	27.6	1.2	28.7	1.2	29.8	1.3	40
30	21.2	.8	22.2	.8	23.3	0.9	24.3	0.9	25.3	0.9	26.4	1.0	27.5	1.0	28.6	1.0	29.8	1.1	31.0	1.2	30
40	22.0	.8	23.0	.8	24.1	.8	25.1	.8	26.2	.9	27.3	0.9	28.5	1.0	29.6	1.0	30.8	1.0	32.0	1.0	20
50	22.6	.6	23.7	.7	24.8	.7	25.9	.8	27.0	.8	28.2	.9	29.3	0.8	30.5	0.9	31.7	0.9	33.0	1.0	10
5 0	23.2	.6	24.3	.6	25.4	.6	26.5	.6	27.7	.7	28.9	.7	30.1	.8	31.3	.8	32.6	.9	33.8	0.8	0
10	23.7	.5	24.8	.5	26.0	.6	27.1	.6	28.3	.6	29.5	.6	30.7	.9	32.0	.7	33.3	.7	34.6	.8	6 50
20	24.1	.4	25.3	.5	26.4	.4	27.6	.5	28.8	.5	30.0	.5	31.3	.6	32.5	.5	33.8	.5	35.2	.6	40
30	24.4	.3	25.6	.3	26.8	.4	28.0	.4	29.2	.4	30.4	.4	31.7	.4	33.0	.5	34.3	.5	35.6	.4	30
40	24.7	.3	25.8	.2	27.0	.2	28.2	.2	29.5	.3	30.7	.3	32.0	.3	33.3	.3	34.6	.3	36.0	.4	20
50	24.8	.1	26.0	.2	27.2	.2	28.4	.2	29.6	.1	30.9	.2	32.2	.2	33.5	.2	34.8	.2	36.2	.2	10
6 0	24.9	.1	26.0	.0	27.2	.0	28.5	.1	29.7	.1	31.0	.1	32.2	.0	33.6	.1	34.9	.1	36.3	.1	6 0

TABLE C.

C = the 3d correction. Hor. Arg., *the star's declination*. Vert. Arg., *B = the 2d correction*.

B.	88° 39′				88° 40′						88° 41′		
	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″	0″	10″	20″
″	″	″	″	″	″	″	″	″	″	″	″	″	″
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	—0.0	—0.1	—0.1	—0.2	—0.2	—0.2	—0.3	—0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	—0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0 2	0.0	+0.2	—0.4	—0.6	—0.8	—1.0	—1.2	—1.4	—1.7

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = *the* 2d *correction.* This correction is always *additive.*

Star's Hour Angle.	STAR'S ALTITUDE.																				Star's Hour Angle.
	34°		35°		36°		37°		38°		39°		40°		41°		42°		43°		
h m	"		"		"		"		"		"		"		"		"		"		h m
0 0	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		12 0
10	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	11 50
20	0.3	.2	0.3	.2	0.3	.2	0.3	.2	0.3	.2	0.3	.2	0.4	.3	0.4	.3	0.4	.3	0.4	.3	40
30	0.6	.3	0.7	.4	0.7	.4	0.7	.4	0.7	.4	0.8	.5	0.8	.4	0.8	.4	0.9	.5	0.9	.5	30
40	1.1	.5	1.2	.5	1.2	.5	1.3	.6	1.3	.6	1.4	.6	1.4	.6	1.5	.7	1.5	.6	1.6	.7	20
50	1.8	.7	1.8	.6	1.9	.7	2.0	.7	2.0	.7	2.1	.7	2.2	.8	2.3	.8	2.4	.9	2.4	.8	10
1 0	2.5	.7	2.6	.8	2.7	.8	2.8	.8	2.9	.9	3.0	.9	3.1	.9	3.3	1.0	3.4	1.0	3.5	1.1	0
10	3.4	.9	3.5	.9	3.7	1.0	3.8	1.0	3.9	1.0	4.1	1.1	4.2	1.1	4.4	1.1	4.6	1.2	4.7	1.2	10 50
20	4.4	1.0	4.6	1.1	4.7	1.1	4.9	1.1	5.1	1.2	5.3	1.2	5.5	1.3	5.7	1.3	5.9	1.3	6.1	1.4	40
30	5.5	1.1	5.7	1.1	5.9	1.2	6.2	1.3	6.4	1.3	6.6	1.3	6.9	1.4	7.1	1.4	7.4	1.5	7.6	1.5	30
40	6.7	1.2	7.0	1.3	7.2	1.3	7.5	1.3	7.8	1.4	8.1	1.5	8.4	1.5	8.7	1.6	9.0	1.6	9.3	1.7	20
50	8.0	1.3	8.3	1.3	8.6	1.4	9.0	1.5	9.3	1.5	9.6	1.5	10.0	1.6	10.3	1.6	10.7	1.7	11.1	1.8	10
2 0	9.4	1.4	9.8	1.5	10.1	1.5	10.5	1.5	10.9	1.6	11.3	1.7	11.7	1.7	12.1	1.8	12.6	1.9	13.0	1.9	0
10	10.9	1.5	11.3	1.5	11.7	1.6	12.1	1.6	12.6	1.7	13.1	1.8	13.5	1.8	14.0	1.9	14.5	1.9	15.0	2.0	9 50
20	12.4	1.5	12.9	1.6	13.3	1.6	13.8	1.7	14.4	1.8	14.9	1.8	15.4	1.9	16.0	2.0	16.5	2.0	17.1	2.1	40
30	14.0	1.6	14.5	1.6	15.0	1.7	15.6	1.8	16.2	1.8	16.8	1.9	17.4	2.0	18.0	2.0	18.6	2.1	19.3	2.2	30
40	15.6	1.6	16.2	1.7	16.8	1.8	17.4	1.8	18.0	1.8	18.7	1.9	19.4	2.0	20.0	2.0	20.8	2.2	21.5	2.2	20
50	17.2	1.6	17.8	1.7	18.5	1.7	19.2	1.8	19.9	1.9	20.6	1.9	21.4	2.0	22.2	2.2	22.9	2.1	23.8	2.3	10
3 0	18.8	1.6	19.6	1.7	20.3	1.8	21.0	1.8	21.8	1.9	22.6	2.0	23.4	2.0	24.3	2.1	25.1	2.2	26.0	2.2	0
10	20.5	1.7	21.8	1.7	22.1	1.8	22.9	1.9	23.7	1.9	24.6	2.0	25.5	2.1	26.4	2.1	27.3	2.2	28.3	2.3	8 50
20	22.1	1.6	23.0	1.7	23.8	1.7	24.7	1.8	25.6	1.9	26.5	1.9	27.5	2.0	28.5	2.1	29.5	2.2	30.6	2.3	40
30	23.7	1.6	24.6	1.6	25.5	1.7	26.8	1.8	27.5	1.9	28.5	2.0	29.5	2.0	30.6	2.1	31.7	2.2	32.8	2.2	30
40	25.3	1.6	26.2	1.6	27.2	1.7	28.2	1.7	29.3	1.8	36.4	1.9	31.5	2.0	32.6	2.0	33.8	2.1	35.0	2.2	20
50	26.8	1.5	27.8	1.6	28.9	1.7	29.9	1.7	31.0	1.7	32.2	1.8	33.3	1.8	34.5	1.9	35.8	2.0	37.0	2.2	10
4 0	28.2	1.4	29.3	1.5	30.4	1.5	31.6	1.7	32.7	1.7	33.9	1.7	35.1	1.8	36.4	1.9	37.7	1.9	39.1	2.1	0
10	29.6	1.4	30.8	1.5	31.9	1.5	33.1	1.5	34.3	1.6	35.6	1.7	36.9	1.8	38.2	1.8	39.6	1.9	41.0	1.9	7 50
20	31.0	1.4	32.1	1.3	33.3	1.4	34.6	1.5	35.8	1.5	37.2	1.6	38.5	1.6	39.9	1.7	41.3	1.7	42.8	1.8	40
30	32.2	1.2	33.4	1.3	34.6	1.3	35.9	1.3	37.2	1.4	38.6	1.4	40.0	1.5	41.4	1.5	42.9	1.6	44.5	1.7	30
40	33.3	1.1	34.5	1.1	35.8	1.2	37.2	1.3	38.5	1.3	39.9	1.3	41.4	1.4	42.9	1.5	44.4	1.5	46.0	1.5	20
50	34.3	1.0	35.6	1.1	36.9	1.1	38.3	1.1	39.7	1.2	41.1	1.2	42.6	1.2	44.2	1.3	45.7	1.3	47.4	1.4	10
5 0	35.1	0.8	36.5	0.9	37.9	1.0	39.3	1.0	40.7	1.0	42.2	1.1	43.7	1.1	45.3	1.1	46.9	1.2	48.6	1.2	0
10	35.9	.8	37.3	.8	38.7	0.8	40.1	0.8	41.6	0.9	43.1	0.9	44.7	1.0	46.3	1.0	47.9	1.0	49.6	1.0	6 50
20	36.5	.6	37.9	.6	39.4	.7	40.8	.7	42.3	.7	43.9	.8	45.5	0.8	47.1	0.8	48.8	0.9	50.5	0.9	40
30	37.0	.5	38.4	.5	39.9	.5	41.4	.6	42.9	.6	44.5	.6	46.1	.6	47.7	.6	49.4	.6	51.2	.7	30
40	37.4	.4	38.8	.4	40.3	.4	41.8	.4	43.3	.4	44.9	.4	46.5	.4	48.2	.5	49.9	.5	51.7	.5	20
50	37.6	.2	39.0	.2	40.5	.2	42.0	.2	43.5	.2	45.1	.2	46.8	.3	48.5	.3	50.2	.3	52.0	.3	10
6 0	37.7	.1	39.1	.1	40.6	.1	42.1	.1	43.6	.1	45.2	.1	46.9	.1	48.5	.1	50.3	.1	52.1	.1	6 0

TABLE C.

C = *the* 3*d correction.* Hor. Arg., *the star's declination.* Vert. Arg., *B* = *the* 2*d correction.*

B.	88° 39′				88° 40′						88° 41′		
	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″	0″	10″	20″
"	"	"	"	"	"	"	"	"	"	"	"	"	"
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	+0.2	+0.1	+0.1	+0.0	0.0	—0.0	—0.1	—0.1	—0.2	—0.2	—0.2	—0.3	—0.3
20	0.3	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
30	0.5	0.4	0.2	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0
40	0.7	0.5	0.3	0.2	0.0	—0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3
50	+0.8	+0.6	+0.4	+0.2	0.0	+0.2	—0.4	—0.6	—0.8	—1.0	—1.2	—1.4	—1.7

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

B = the 2d correction. This correction is always *additive.*

Star's Hour Angle.	STAR'S ALTITUDE. 44°		45°		46°		47°		48°		49°		50°		51°		52°		Star's Hour Angle
h m	"		"		"		"		"		"		"		"		"		h m
0 0	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		12 0
10	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	0.1	.1	11 50
20	0.4	.3	0.4	.3	0.4	.3	0.4	.3	0.5	.4	0.5	.4	0.5	.4	0.5	.4	0.5	.4	40
30	0.9	.5	0.9	.5	1.0	.6	1.0	.6	1.1	.6	1.1	.6	1.1	.6	1.2	.7	1.2	.7	30
40	1.6	.7	1.7	.8	1.7	.7	1.8	.8	1.9	.8	1.9	.8	2.0	.9	2.1	.9	2.2	1.0	20
50	2.5	.9	2.6	.9	2.7	1.0	2.8	1.0	2.9	1.0	3.0	1.1	3.1	1.1	3.2	1.1	3.4	1.2	10
1 0	3.6	1.1	3.7	1.1	3.9	1.2	4.0	1.2	4.2	1.3	4.3	1.3	4.5	1.4	4.6	1.4	4.8	1.4	0
10	4.9	1.3	5.0	1.3	5.2	1.3	5.4	1.4	5.6	1.4	5.8	1.5	6.0	1.5	6.2	1.6	6.5	1.7	10 50
20	6.3	1.4	6.5	1.5	6.8	1.6	7.0	1.6	7.3	1.7	7.5	1.7	7.8	1.8	8.1	1.9	8.4	1.9	40
30	7.9	1.6	8.2	1.7	8.5	1.7	8.8	1.8	9.1	1.8	9.4	1.9	9.8	2.0	10.1	2.0	10.5	2.1	30
40	9.6	1.7	10.0	1.8	10.3	1.8	10.7	1.9	11.1	2.0	11.5	2.1	11.9	2.1	12.3	2.2	12.8	2.3	20
50	11.5	1.9	11.9	1.9	12.3	2.0	12.8	2.1	13.2	2.1	13.7	2.2	14.2	2.3	14.7	2.4	15.2	2.4	10
2 0	13.5	2.0	14.0	2.1	14.5	2.2	15.0	2.2	15.5	2.3	16.1	2.4	16.6	2.4	17.2	2.5	17.9	2.7	0
10	15.6	2.1	16.1	2.1	16.7	2.2	17.3	2.3	17.9	2.4	18.5	2.4	19.2	2.6	19.9	2.7	20.6	2.7	9 50
20	17.7	2.1	18.4	2.3	19.0	2.3	19.7	2.4	20.4	2.5	21.1	2.6	21.9	2.7	22.7	2.8	23.5	2.9	40
30	20.0	2.3	20.7	2.3	21.4	2.4	22.2	2.5	23.0	2.6	23.8	2.7	24.7	2.8	25.6	2.9	26.5	3.0	30
40	22.3	2.3	23.1	2.4	23.9	2.5	24.7	2.5	25.6	2.6	26.6	2.8	27.5	2.8	28.5	2.9	29.5	3.0	20
50	24.6	2.3	25.5	2.4	26.4	2.5	27.3	2.6	28.3	2.7	29.3	2.7	30.4	2.9	31.5	3.0	32.6	3.1	10
3 0	27.0	2.4	27.9	2.4	28.9	2.5	29.9	2.6	31.0	2.7	32.1	2.8	33.3	2.9	34.5	3.0	35.7	3.1	0
10	29.3	2.3	30.4	2.5	31.4	2.5	32.6	2.7	33.7	2.7	34.9	2.8	36.2	2.9	37.5	3.0	38.9	3.2	8 50
20	31.7	2.4	32.8	2.4	33.9	2.5	35.2	2.6	36.4	2.7	37.7	2.8	39.1	2.9	40.5	3.0	42.0	3.1	40
30	34.0	2.3	35.2	2.4	36.4	2.5	37.7	2.5	39.0	2.6	40.4	2.7	41.9	2.8	43.4	2.9	45.0	3.1	30
40	36.2	2.2	37.5	2.3	38.8	2.4	40.2	2.5	41.6	2.6	43.1	2.7	44.7	2.8	46.3	2.9	38.0	3.0	20
50	38.4	2.2	39.7	2.2	41.1	2.3	42.6	2.4	44.1	2.5	45.7	2.6	47.3	2.6	49.1	2.9	50.9	2.9	10
4 0	40.4	2.0	41.9	2.2	43.4	2.3	44.9	2.3	46.5	2.4	48.2	2.5	49.9	2.6	51.7	2.6	53.6	2.7	0
10	42.4	2.0	43.9	2.0	45.5	2.1	47.1	2.2	48.8	2.3	50.6	2.4	52.4	2.5	54.3	2.6	56.2	2.6	7 50
20	44.3	1.9	45.9	2.0	47.5	2.0	49.2	2.1	50.9	2.1	52.8	2.2	54.7	2.3	56.7	2.4	58.7	2.5	40
30	46.0	1.7	47.7	1.8	49.4	1.9	51.1	1.9	52.9	2.0	54.8	2.0	56.8	2.1	58.9	2.2	61.0	2.3	30
40	47.6	1.6	49.3	1.6	51.1	1.7	52.9	1.8	54.8	1.9	56.7	1.9	58.8	2.0	60.9	2.0	63.1	2.1	20
50	49.1	1.5	50.8	1.5	52.6	1.5	54.5	1.6	56.4	1.6	58.4	1.7	60.5	1.7	62.7	1.8	65.0	1.9	10
5 0	50.3	1.2	52.1	1.3	54.0	1.4	55.9	1.4	57.9	1.5	60.0	1.6	62.1	1.6	64.4	1.7	66.7	1.7	0
10	51.4	1.1	53.2	1.1	55.1	1.1	57.1	1.2	59.1	1.2	61.3	1.3	63.4	1.3	65.7	1.3	68.1	1.4	6 50
20	52.3	0.9	54.2	1.0	56.1	1.0	58.1	1.0	60.2	1.1	62.3	1.0	64.6	1.2	66.9	1.2	69.3	1.2	40
30	53.0	.7	54.9	0.7	56.9	0.8	58.9	0.8	61.0	0.8	63.2	0.9	65.4	0.8	67.8	0.9	70.3	1.0	30
40	53.5	.5	55.4	.5	57.4	.5	59.4	.5	61.6	.6	63.8	.6	66.1	.7	68.5	.7	71.0	0.7	20
50	53.8	.3	55.7	.3	57.7	.3	59.8	.4	61.9	.3	64.1	.3	66.4	.3	68.8	.3	71.4	.4	10
6 0	53.9	.1	55.9	.2	57.8	.1	59.9	.1	62.0	.1	64.3	.2	66.6	.2	69.0	.2	71.5	.1	6 0

TABLE C.

C = the 3d correction. Hor. Arg., *the star's declination.* Vert. Arg., *B = the 2d correction.*

B.	88° 39′				88° 40′						88° 41′		
	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″	0″	10″	20″
"	"	"	"	"	"	"	"	"	"	"	"	"	"
30	+0.5	+0.4	+0.2	+0.1	0.0	—0.1	—0.2	—0.4	—0.5	—0.6	—0.7	—0.9	—1.0
40	0.7	0.5	0.3	0.2	0.0	0.2	0.3	0.5	0.7	0.8	1.0	1.1	1.3
50	0.8	0.6	0.4	0.2	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
60	1.0	0.7	0.5	0.2	0.0	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0
70	1.2	0.9	0.6	0.3	0.0	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.3
80	+1.3	+1.0	+0.7	+0.4	0.0	—0.4	—0.7	—1.0	—1.3	—1.6	—2.0	—2.3	—2.6

TABLE B.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLAR

B=*the* 2d *correction*. This correction is always *additive*.

Star's Hour Angle.	STAR'S ALTITUDE.																
	53°		54°		55°		56°		57°		58°		59°		60°		
h m	′ ″		′ ″		′ ″		′ ″		′ ″		′ ″		′ ″		′ ″		h
0 0	0 0.0		0 0.0		0 0.0		0 0.0		0 0.0		0 0.0		0 0.0		0 0.0		12
10	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	11
20	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.4	0.6	0.5	0.7	0.5	0.7	0.5	0.7	0.5	
30	1.3	0.7	1.3	0.7	1.4	0.8	1.4	0.8	1.5	0.8	1.5	0.8	1.6	0.9	1.6	0.9	
40	2.2	0.9	2.3	1.0	2.5	1.0	2.5	1.1	2.6	1.1	2.7	1.2	2.8	1.2	2.9	1.3	
50	3.5	1.3	3.6	1.3	3.7	1.3	3.9	1.4	4.0	1.4	4.2	1.5	4.3	1.5	4.5	1.6	
1 0	5.0	1.5	5.1	1.5	5.3	1.6	5.5	1.6	5.8	1.8	6.0	1.8	6.2	1.9	6.5	2.0	
10	0 6.7	1.7	0 6.9	1.8	0 7.2	1.9	0 7.5	2.0	0 7.8	2.0	0 8.1	2.1	0 8.4	2.2	0 8.7	2.3	10
20	8.7	2.0	9.0	2.1	9.3	2.1	9.7	2.2	10.1	2.3	10.5	2.4	10.9	2.5	11.3	2.6	
30	10.9	2.2	11.3	2.3	11.7	2.4	12.1	2.4	12.6	2.5	13.1	2.7	13.6	2.7	14.2	2.9	
40	13.2	2.3	13.7	2.4	14.2	2.5	14.8	2.7	15.4	2.8	16.0	2.9	16.6	3.0	17.3	3.1	
50	15.8	2.6	16.4	2.7	17.0	2.8	17.6	2.8	18.3	2.9	19.1	3.1	19.8	3.2	20.6	3.3	
2 0	18.5	2.7	19.2	2.8	19.9	2.9	20.7	3.1	21.5	3.2	22.3	3.3	23.2	3.4	24.2	3.6	
10	0 21.4	2.9	0 22.2	3.0	0 23.0	3.1	0 23.9	3.2	0 24.8	3.3	0 25.8	3.4	0 26.8	3.6	0 27.9	3.7	9
20	24.4	3.0	25.3	3.1	26.2	3.2	27.2	3.3	28.3	3.5	29.4	3.6	30.6	3.8	31.8	3.9	
30	27.6	3.1	28.5	3.2	29.6	3.4	30.7	3.5	31.9	3.6	33.1	3.7	34.4	3.8	35.9	4.1	
40	30.6	3.1	31.8	3.3	33.0	3.4	34.2	3.5	35.5	3.6	36.9	3.8	38.4	4.0	40.0	4.1	
50	33.8	3.2	35.1	3.3	36.4	3.4	37.8	3.6	39.3	3.8	40.8	3.9	42.4	4.0	44.2	4.2	
3 0	37.1	3.3	38.4	3.3	39.9	3.5	41.4	3.6	43.0	3.7	44.7	3.9	46.5	4.1	48.4	4.2	
10	0 40.3	3.2	0 41.8	3.4	0 43.4	3.5	0 45.0	3.6	0 46.8	3.8	0 48.6	3.9	0 50.5	4.0	0 52.6	4.2	8 50
20	43.5	3.2	45.1	3.3	46.8	3.4	48.6	3.6	50.5	3.7	52.5	3.9	54.6	4.1	56.8	4.2	40
30	46.7	3.2	48.4	3.3	50.2	3.4	52.1	3.5	54.1	3.6	56.3	3.8	58.5	3.9	1 0.9	4.1	30
40	49.7	3.0	51.6	3.2	53.5	3.3	55.6	3.5	57.7	3.6	1 0.0	3.7	1 2.4	3.9	1 4.9	4.0	20
50	52.7	3.0	54.7	3.1	56.7	3.2	58.9	3.3	1 1.2	3.5	1 3.6	3.6	1 6.1	3.7	1 8.8	3.9	10
4 0	55.6	2.9	57.7	3.0	59.8	3.1	1 2.1	3.2	1 4.5	3.3	1 7.0	3.4	1 9.7	3.6	1 12.6	3.8	0
10	0 58.3	2.7	1 0.5	2.8	1 2.8	3.0	1 5.1	3.0	1 7.7	3.2	1 10.3	3.3	1 13.1	3.4	1 16.1	3.5	7 50
20	1 0.9	2.6	1 3.1	2.6	1 5.5	2.7	1 8.0	2.9	1 10.6	2.9	1 13.4	3.1	1 16.4	3.3	1 19.5	3.4	40
30	1 3.3	2.4	1 5.6	2.5	1 8.1	2.6	1 10.7	2.7	1 13.4	2.8	1 16.3	2.9	1 19.4	3.0	1 22.6	3.1	30
40	1 5.5	2.2	1 7.9	2.3	1 10.4	2.4	1 13.1	2.4	1 16.0	2.6	1 18.9	2.6	1 22.1	2.7	1 25.4	2.8	20
50	1 7.4	1.9	1 9.9	2.0	1 12.6	2.1	1 15.3	2.2	1 18.3	2.3	1 21.3	2.4	1 24.6	2.5	1 28.0	2.6	10
5 0	1 9.2	1.8	1 11.7	1.8	1 14.4	1.8	1 17.3	2.0	1 20.3	2.0	1 23.4	2.1	1 26.7	2.2	1 30.3	2.3	0
10	1 10.7	1.5	1 13.3	1.6	1 16.0	1.6	1 18.9	1.6	1 22.0	1.7	1 25.2	1.8	1 28.6	1.9	1 32.2	2.0	6 50
20	1 11.9	1.2	1 14.6	1.3	1 17.4	1.4	1 20.3	1.4	1 23.4	1.4	1 26.7	1.5	1 30.2	1.6	1 33.9	1.7	40
30	1 12.9	1.0	1 15.6	1.0	1 18.4	1.0	1 21.4	1.1	1 24.6	1.2	1 27.9	1.2	1 31.4	1.2	1 35.1	1.2	30
40	1 13.6	0.7	1 16.3	0.7	1 19.2	0.8	1 22.2	0.8	1 25.4	0.8	1 28.7	0.8	1 32.3	0.9	1 36.0	0.9	20
50	1 14.0	0.4	1 16.7	0.4	1 19.6	0.4	1 22.7	0.5	1 25.9	0.5	1 29.2	0.5	1 32.8	0.5	1 36.6	0.6	10
6 0	1 14.1	0.1	1 16.9	0.2	1 19.8	0.2	1 22.8	0.1	1 26.0	0.1	1 29.4	0.2	1 33.0	0.2	1 36.8	0.2	6 0

TABLE C.

C=*the* 3*d correction*. Hor. Arg., *the star's declination*. Vert. Arg., *B*=*the* 2*d correction*.

B.	88° 39′				88° 40′						88° 41′		
	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″	0″	10″	20″
′ ″	″	″	″	″	″	″	″	″	″	″	″	″	″
1 0	+1.0	+0.7	+0.5	+0.2	0.0	—0.2	—0.5	—0.7	—1.0	—1.2	—1.5	—1.7	—2.
10	1.2	0.9	0.6	0.3	0.0	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.
20	1.3	1.0	0.7	0.3	0.0	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.
30	1.5	1.1	0.7	0.4	0.0	0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.
40	1.7	1.2	0.8	0.4	0.0	0.4	0.8	1.2	1.7	2.1	2.5	2.9	3.
50	1.8	1.4	0.9	0.5	0.0	0.4	0.9	1.4	1.8	2.3	2.7	3.2	3.
2 0	+2.0	+1.5	+1.0	+0.5	0.0	—0.5	—1.0	—1.5	—2.0	—2.5	—3.0	—3.5	—4

TABLE D.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

D = *the 3d correction.* (*D* has the same sign as *A* when the Dec. < 88° 40′, the opposite sign when the Dec. > 88° 40′.)

Vertical Argument, *A* = *the 1st correction.* Horizontal Argument, *the star's declination.*

A	Declination, 88° 39′.								88° 40′.						Proportional Parts.			
	20″	25″	30″	35″	40″	45″	50″	55″	0″	5″	10″	15″	20″	25″	1″	2″	3″	4″
′	* ″	″	″	″	* ″	″	″	″	* ″	″	″	″	* ″	″	″	″	″	* ″
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.0	0.9	0.7.	0.6	0.5	0.4	0.2·	0.1	0.0	0.1	0.2·	0.4	0.5	0.6	0.0	0.0·	0.1	0.1
4	2.0	1.7.	1.5	1.2·	1.0	0.7.	0.5	0.2·	0.0	0.2·	0.5	0.7.	1.0	1.2·	0.0·	0.1	0.1·	0.2
6	3.0	2.6	2.2·	1.9	1.5	1.1	0.7.	0.4	0.0	0.4	0.7.	1.1	1.5	1.9	0.1	0.1·	0.2	0.3
* 8	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	0.0	0.5	1.0	1.5	2.0	2.5	0.1	0.2	0.3	0.4
10	5.0	4.4	3.7·	3.1	2.5	1.9	1.2.	0.6	0.0	0.6	1.2·	1.9	2.5	3.1	0.1	0.2·	0.4	0.5
12	6.0	5.2·	4.5	3.7.	3.0	2.2·	1.5	0.7	0.0	0.7	1.5	2.2·	3.0	3.7.	0.1·	0.3	0.4.	0.6
14	7.0	6.1	5.2·	4.4	3.5	2.6	1.7.	0.9	0.0	0.9	1.7.	2.6	3.5	4.4	0.2	0.3·	0.5	0.7
* 16	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.0	0.0	1.0	2.0	3.0	4.0	5.0	0.2	0.4	0.6	0.8
18	9.0	7.9	6.7.	5.6	4.5	3.4	2.2·	1.1	0.0	1.1	2.2·	3.4	4.5	5.6	0.2	0.4.	0.7	0.9
20	10.0	8.7.	7.5	6.2·	5.0	3.7.	2.5	1.2·	0.0	1.2·	2.5	3.7·	5.0	6.2·	0.2·	0.5	0.7.	1.0
22	11.0	9.6	8.2·	6.9	5.5	4.1	2.7·	1.4	0.0	1.4	2.7.	4.1	5.5	6.9	0.3	0.5.	0.8	1.1
* 24	12.0	10.5	9.0	7.5	6.0	4.5	3.0	1.5	0.0	1.5	3.0	4.5	6.0·	7.5	0.3	0.6	0.9	1.2
26	13.0	11.4	9.7.	8.1	6.5	4.9	3.2·	1.6	0.0	1.6	3.2·	4.9	6.5	8.1	0.3	0.6·	1.0	1.3
28	14.0	12.2·	10.5	8.7.	7.0	5.2·	3.5	1.7.	0.0	1.7.	3.5	5.2·	7.0	8.7.	0.3.	0.7	1.0·	1.4
30	15.0	13.1	11.2·	9.4	7.5	5.6	3.7.	1.9	0.0	1.9	3.7.	5.6	7.5	9.4	0.4	0.7.	1.1	1.5
* 32	16.0	14.0	12.0	10.0	8.0	6.0	4.0	2.0	0.0	2.0	4.0	6.0	8.0	10.0	0.4	0.8	1.2	1.6
34	17.0	14.9	12.7.	10.6	8.5	6.4	4.2·	2.1	0.0	2.1	4.2	6.4	8.5	10.6	0.4	0.8·	1.3	1.7
36	18.0	15.7.	13.5	11.2·	9.0	6.7.	4.5	2.2·	0.0	2.2·	4.5	6.7.	9.0	11.2·	0.4·	0.9	1.3.	1.8
38	19.0	16.6	14.2·	11.9	9.5	7.1	4.7.	2.4	0.0	2.4	4.7.	7.1	9.5	11.9	0.5	0.9.	1.4	1.9
* 40	20.0	17.5	15.0	12.5	10.0	7.5	5.0	2.5	0.0	2.5	5.0	7.5	10.0	12.5	0.5	1.0	1.5	2.0
42	21.0	18.4	15.7.	13.1	10.5	7.9	5.2·	2.6	0.0	2.6	5.2·	7.9	10.5	13.1	0.5	1.0·	1.6	2.1
44	22.0	19.2·	16.5	13.7.	11.0	8.2·	5.5	2.7.	0.0	2.7.	5.5	8.2·	11.0	13.7	0.5.	1.1	1.6·	2.2
46	23.0	20.1	17.2·	14.4	11.5	8.6	5.7.	2.9	0.0	2.9	5.7·	8.6	11.5	14.4	0.6	1.1·	1.7	2.3
* 48	24.0	21.0	18.0	15.0	12.0	9.0	6.0	3.0	0.0	3.0	6.0	9.0	12.0	15.0	0.6	1.2	1.8	2.4
50	25.0	21.9	18.7.	15.6	12.5	9.4	6.2	3.1	0.0	3.1	6.2·	9.4	12.5	15.6	0.6	1.2·	1.9	2.5
52	26.0	22.7.	19.5	16.2·	13.0	9.7.	6.5	3.2·	0.0	3.2·	6.5	9.7.	13.0	16.2·	0.6·	1.3	1.9.	2.6
54	27.0	23.6	20.2·	16.9	13.5	10.1	6.7	3.4	0.0	3.4	6.7	10.1	13.5	16.9	0.7	1.3.	2.0	2.7
* 56	28.0	24.5	21.0	17.5	14.0	10.5	7.0	3.5	0.0	3.5	7.0	10.5	14.0	17.5	0.7	1.4	2.1	2.8
58	29.0	25.4	21.7.	18.1	14.5	10.9	7.2·	3.6	0.0	3.6	7.2·	10.9	14.5	18.1	0.7	1.4.	2.2	2.9
60	30.0	26.2·	22.5	18.7.	15.0	11.2·	7.5	3.7.	0.0	3.7·	7.5	11.2·	15.0·	18.7.	0.7.	1.5	2.2·	3.0
62	31.0	27.1	23.2·	19.4	15.5	11.6	7.7.	3.9	0.0	3.9	7.7.	11.6	15.5	19.4	0.8	1.5.	2.3	3.1
* 64	32.0	28.0	24.0	20.0	16.0	12.0	8.0	4.0	0.0	4.0	8.0	12.0	16.0	20.0	0.8	1.6	2.4	3.2
66	33.0	28.9	24.7·	20.6	16.5	12.4	8.2·	4.1	0.0	4.1	8.2·	12.4	16.5	20.6	0.8	1.6·	2.5	3.3
68	34.0	29.7.	25.5	21.2·	17.0	12.7.	8.5	4.2·	0.0	4.2·	8.5	12.7.	17.0	21.2·	0.8·	1.7	2.5.	3.4
70	35.0	30.6	26.2.	21.9	17.5	13.1	8.7.	4.4	0.0	4.4	8.7.	13.1	17.5	21.9	0.9	1.7	2.6	3.5
* 72	36.0	31.5	27.0	22.5	18.0	13.5	9.0	4.5	0.0	4.5	9.0	13.5	18.0	22.5	0.9	1.8	2.7	3.6
74	37.0	32.4	27.7.	23.1	18.5	13.9	9.2·	4.6	0.0	4.6	9.2·	13.9	18.5	23.1	0.9	1.8·	2.8	3.7
76	38.0	33.2·	28.5	23.7.	19.0	14.2·	9.5	4.7.	0.0	4.7.	9.5	14.2·	19.0	23.7.	0.9.	1.9	2.8	3.8
78	39.0	34.1·	29.2·	24.4	19.5	14.6	9.7·	4.9	0.0	4.9	9.7·	14.6	19.5	24.4	1.0	1.9.	2.9	3.9
* 80	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	0.0	5.0	10.0	15.0	20.0	25.0	1.0	2.0	3.0	4.0

	Proportional Parts.													
′ ″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
0 20	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
0 40	0.3	0.3	0.2·	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2
1 0	0.5	0.4	0.4	0.3	0.2·	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2·	0.3
1 20	0.7	0.6	0.5	0.4	0.3	0.2·	0.2	0.1	0.0	0.1	0.2	0.2·	0.3	0.4
1 40	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.1	0.2	0.3	0.4	0.5
2 0	1.0	0.9	0.7·	0.6	0.5	0.4	0.2·	0.1	0.0	0.1	0.2·	0.4	0.5	0.6

Note.—The numbers in the columns and lines marked * are exact.

TABLE D.

FOR FINDING THE LATITUDE OF A PLACE BY ALTITUDES OF POLARIS.

D = *the* 3*d correction*. (D has the same sign as $\mathcal{A}$ when the Dec. $<$ 88° 40′, the opposite sign when the Dec. $>$ 88° 40′.)

Vertical Argument, $\mathcal{A}$ = *the* 1*st correction*. Horizontal Argument, *the star's declination.*

$\mathcal{A}$	Declination, 88° 40′.						88° 41′.					Proportional Parts.			
	30″	35″	40″	45″	50″	55″	0″	5″	10″	15″	20″	1″	2″	3″	4″
			*				*				*				*
′	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7.	0.9	1.0	1.1	1.2·	1.4	1.5	1.6	1.7.	1.9	2.0	0.0	0.0·	0.1	0.1
4	1.5	1.7.	2.0	2.2·	2.5	2.8	3.0	3.2·	3.5	3.7.	4.0	0.0·	0.1	0.1·	0.2
6	2.2	2.6	3.0	3.4	3.7·	4.1	4.5	4.8	5.2·	5.6	6.0	0.1	0.1.	0.2	0.3
* 8	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	0.1	0.2	0.3	0.4
10	3.7·	4.4	5.0	5.6	6.2·	6.9	7.5	8.1	8.7.	9.4	10.0	0.1	0.2·	0.4	0.5
12	4.5	5.2·	6.0	6.7.	7.5	8.3	9.0	9.7.	10.5	11.3	12.0	0.1·	0.3	0.4.	0.6
14	5.2·	6.1	7.0	7.9	8.7.	9.6	10.5	11.4	12.3	13.1	14.0	0.2	0.3·	0.5	0.7
* 16	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	0.2	0.4	0.6	0.8
18	6.7.	7.9	9.0	10.1	11.2·	12.4	13.5	14.6	15.8	16.9	18.0	0.2	0.4·	0.7	0.9
20	7.5	8.7.	10.0	11.2·	12.5	13.8	15.0	16.3	17.5	18.8	20.0	0.2·	0.5	0.7.	1.0
22	8.2·	9.6	11.0	12.4	13.7.	15.1	16.5	17.8	19.3	20.6	22.0	0.3	0.5·	0.8	1.1
* 24	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	0.3	0.6	0.9	1.2
26	9.7.	11.4	13.0	14.6	16.2·	17.9	19.5	21.1	22.8	24.4	26.0	0.3	0.6·	1.0	1.3
28	10.5	12.2·	14.0	15.7.	17.5	19.3	21.0	22.8	24.5	26.3	28.0	0.3·	0.7	1.0·	1.4
30	11.2·	13.1	15.0	16.9	18.7.	20.6	22.5	24.4	26.3	28.1	30.0	0.4	0.7·	1.1	1.5
* 32	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	0.4	0.8	1.2	1.6
34	12.7.	14.9	17.0	19.1	21.2·	23.4	25.5	27.6	29.8	31.9	34.0	0.4	0.8·	1.3	1.7
36	13.5	15.7.	18.0	20.2·	22.5	24.8	27.0	39.3	31.5	33.8	36.0	0.4·	0.9	1.3.	1.8
38	14.2·	16.6	19.0	21.4	23.7.	26.1	28.5	30.8	33.3	35.6	38.0	0.5	0.9.	1.4	1.9
* 40	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	0.5	1.0	1.5	2.0
42	15.7.	18.4	21.0	23.6	26.2·	28.9	31.5	34.1	36.8	39.4	42.0	0.5	1.0·	1.6	2.1
44	16.5	19.2·	22.0	24.7.	27.5	30.3	33.0	35.8	38.5	41.3	44.0	0.5·	1.1	1.6·	2.2
46	17.2·	20.1	23.0	25.9	28.7.	31.6	34.5	37.4	40.3	43.1	46.0	0.6	1.1·	1.7	2.3
* 48	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	45.0	48.0	0.6	1.2	1.8	2.4
50	18.7.	21.9	25.0	28.1	31.2·	34.4	37.5	40.6	43.8	46.9	50.0	0.6	1.2·	1.9	2.5
52	19.5	22.7.	26.0	29.2·	32.5	35.8	39.0	42.3	45.5	48.8	52.0	0.6·	1.3	1.9.	2.6
54	20.2·	23.6	27.0	30.4	33.7·	37.1	40.5	43.8	47.3	50.6	54.0	0.7	1.3·	2.0	2.7
* 56	21.0	24.5	28.0	31.5	35.0	38.5	41.0	45.5	49.0	52.5	56.0	0.7	1.4	2.1	2.8
58	21.7.	25.4	29.0	32.6	36.2·	39.9	43.5	47.1	50.8	54.4	58.0	0.7	1.4·	2.2	2.9
60	22.5	26.2·	30.0	33.7.	37.5	41.3	45.0	48.8	52.5	56.3	60.0	0.7·	1.5	2.2·	3.0
62	23.2·	27.1	31.0	34.9	38.7.	42.6	46.5	50.4	54.3	58.1	62.0	0.8	1.5·	2.3	3.1
* 64	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0	56.0	60.0	64.0	0.8	1.6	2.4	3.2
66	24.7.	28.9	33.0	37.1	41.2·	45.4	49.5	53.6	57.8	61.9	66.0	0.8	1.6·	2.5	3.3
68	25.5	29.7.	34.0	38.2·	42.5	46.8	51.0	55.2	59.5	63.8·	68.0	0.8·	1.7	2.5.	3.4
70	26.2·	30.6	35.0	39.4	43.7.	48.1	52.5	56.8	61.3	65.6	70.0	0.9	1.7	2.6	3.5
* 72	27.0	31.5	36.0	40.5	45.0	49.5	54.0	58.5	63.0	67.5	72.0	0.9	1.8	2.7	3.6
74	27.7.	32.4	37.0	41.6	46.2·	50.9	55.5	60.1	64.7	69.4	74.0	0.9	1.8·	2.8	3.7
76	28.5	33.2·	38.0	42.7.	47.5	52.3	57.0	61.7	66.5	71.2·	76.0	0.9·	1.9	2.8	3.8
78	29.2·	34.1	39.0	43.9	48.7.	53.6	58.5	63.4	68.2·	73.1	78.0	1.0	1.9·	2.9	3.9
* 80	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	1.0	2.0	3.0	4.0
	Proportional Parts.														
′ ″	″	″	″	″	″	″	″	″	″	″	″				
0 20	0.1	0.1	0.2	0.1	0.2	0.2	0.2·	0.3	0.3	0.3	0.3				
0 40	0.2·	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7				
1 0	0.4	0.4	0.5	0.6	0.6	0.7	0.7.	0.8	0.9	0.9	1.0				
1 20	0.5	0.6	0.7	0.7.	0.8	0.9	1.0	1.1	1.2	1.2	1.3				
1 40	0.6	0.7	0.8	0.9	1.0	1.1	1.2·	1.3.	1.5	1.6	1.7				
2 0	0.7.	0.9	1.0	1.1	1.2·	1.4	1.5	1.6	1.7.	1.9	2.0				

Note.—The numbers in the columns and lines marked * are exact.